Ruta Mehta

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Academic Interests

My research is interdisciplinary and intersects theoretical computer science, economics, social choice theory, game theory, evolutionary theory, and machine learning. It looks at the fundamental questions on markets, stable mechanisms, fairness, and learning dynamics from the computational lens. My recent passion is to study and address challenges posed by the *fairness* issues within computation in general. Given my brush with societal biases and resulting unfairness, I am also dedicated to *broadening participation within computing and STEM in general.*

Education

Indian Institute of Technology Bombay — Mumbai, India
Ph.D. in Computer Science and Engineering — 2007 - 2012

Indian Institute of Technology Bombay — Mumbai, India
M.Tech. in Computer Science and Engineering — 2003 - 2005

Appointments

University of Illinois at Urbana-Champaign — USA
Associate Professor, Department of Computer Science — Aug 2023 - present
Associate Professor, Coordinate Science Laboratory (affiliate) — Aug 2023 - present
Founding Member, AImpact Center, UIUC — Jan 2024 - present

University of Illinois at Urbana-Champaign — USA
Assistant Professor, Department of Computer Science — Jan 2016 - Aug 2023
Assistant Professor, Coordinate Science Laboratory (affiliate) — Nov 2021 - Aug 2023

University of California, Berkeley — USA
Simons-Berkeley Research Fellow — Jul 2015 - Dec 2015

Georgia Institute of Technology — USA
Postdoctoral Fellow in the College of Computing — 2012 - 2015

Awards and Recognition (selected)

- Campus Award for Excellence in Guiding Undergraduate Research, 2025.
- College Award for Sustained Excellence in Diversity, Equity, and Inclusion, 2025.
- Placed on the "*List of Instructors Rated as Excellent by Their Students*", Fall 2021, Spring 2017, Fall 2023.
- 21st Max Planck Advanced Course on the Foundations of Computer Science (ADFOCS 2020) Speaker.
- NSF CAREER Award, 2018.
- Simons-Berkeley Research Fellow, 2015.

- Outstanding Postdoctoral Researcher Award, College of Computing, Georgia Tech, 2014.
- Rising Stars in EECS, 2013.
- ACM India Doctoral Dissertation Award, 2012.
- Naik and Rastogi Excellence in Ph.D. Thesis Award, IIT-Bombay, 2013.
- Invited to China Theory Week, Aarhus University, 2012.
- Google India Anita Borg Memorial Scholarship, 2012.
- First prize in poster presentation competition at TechVista 2011, Microsoft Research India.
- IBM Ph.D. Award, 2010.
- IBM Ph.D. Fellowship, 2009.
- Dhirubhai Ambani Scholarship, 1999-2003 (This four-year scholarship covering almost all the expenses of undergraduate studies is given to students who excelled in their 12th board exam).

PUBLICATIONS (Authors are listed in alphabetical order in most papers.)
(papers with students are marked with *, and AR stands for *acceptance rate*)

Working Papers

*P7. Mechanisms for Data Exchange under Competition. Bhaskar Ray Chaudhury, Ruta Mehta, Jiaxin Song, and Brian Tang. *In preperation*

*P6. Pricing Game in API Auction with Complementarities. Kshipra Bhawalkar, Christopher Liaw, Pooja Kulkarni, Ruta Mehta, and Parnian Shahkar. *In preperation.*

P5. Algorithms for Banach Contraction. Eleni Batziou, John Fearnley, Spencer Gordon, Ruta Mehta, and Rahul Savani. *In preperation.*

*P4. Oligopolistic Data Markets: Existence and Computation of Equilibria. Pooja Kulkarni, Ruta Mehta, and Parnian Shahkar. *In Submission.*

P3. Almost and Approximate EFX for Few Types of Agents. Vishwa Prakash HV, Ruta Mehta, and Prajakta Nimbhorkar. *In Submission.*

P2. On the Existence and Computation of Competitive Equilibria in Labor Markets through the Lens of Goods and Chores Fisher Markets. Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta, Tianlong Nan, and Zongjun Yang. *In submission.*

*P1. Online MMS with Worst-Case Guarantees: Randomization Beats the Adversary. Shuchi Chawla, Zhiyi Huang, Pooja Kulkarni, Ruta Mehta, and Parnian Shahkar. *In submission.*

Refereed Conference Papers

*C62.. Online Fair Division With Subsidy: When Do Envy-Free Allocations Exist, and at What Cost? Pooja Kulkarni, Ruta Mehta, Vishnu V. Narayan, and Tomasz Ponitka. *To Appear in Autonomous Agents and Multiagent Systems (AAMAS), 2026.*

C61. Tâtonnement Dynamics for Fisher Markets with Chores. Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta, and Tianlong Nan. *To Appear in ACM Symposium on Theory of Computation (STOC), 2026.*

*C60. Monotone Contractions. Eleni Batziou, John Fearnley, Spencer Gordon, Ruta Mehta, and Rahul Savani. In *Proceedings of the 44th annual ACM symposium on Theory of computing (STOC)*, 2025.

*C59. Online Fair Division: Towards Ex-Post Constant MMS Guarantees. Pooja Kulkarni, Ruta Mehta, and Parnian Shahkar:. In Proceedings of *ACM Conference on Economics and Computation (EC)*, 2025.

*C58. A Unified and Distribution-Optimal Analysis of the Max and Min IID Prophet Inequality. Vasilis Livanos, and Ruta Mehta. In Proceedings of *ACM Conference on Economics and Computation (EC)*, 2025.

*C57. On the structure of envy-free orientations on graphs. Jinghan A Zeng, and Ruta Mehta. In *Proceedings of the 23rd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2025.

*C56. You Get What You Give: Reciprocal Fair Federated Learning. Bhaskar Ray Chaudhury, Aniket Muarhekar, and Ruta Mehta. In Proceedings of *The Forty-first International Conference on Machine Learning (ICML)*, 2025.

*C55. Fair Federated Learning via the Proportional Veto Core. Bhaskar Ray Chaudhury, Aniket Murhekar, Zhuowen Yuan, Bo Li, Ruta Mehta, and Ariel D. Procaccia. In Proceedings of *The Forty-first International Conference on Machine Learning (ICML)*, 2024.

*C54. Competitive Equilibrium for Chores: from Dual Eisenberg-Gale to a Fast, Greedy, LP-based Algorithm. Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta,and Tianlong Nan. In Proceedings of *ACM Conference on Economics and Computation (EC)*, 2024.

*C53. 1/2-Approximate MMS Allocation for Separable Piecewise Linear Concave Valuations. Chandra Chekuri, Pooja Kulkarni, Rucha Kulkarni, and Ruta Mehta. In *Proceedings of the 38th AAAI Conference on Artificial Intelligence (AAAI)*, 2024.

*C52. Approximating APS Under Submodular and XOS Valuations with Binary Marginals. Pooja Kulkarni, Rucha Kulkarni, and Ruta Mehta. In *Proceedings of the 23rd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2024.

**C51. On the existence of EFX under picky or non-differentiative agents. Maya Viswanathan, and Ruta Mehta, In *Proceedings of the 23rd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2024.

*C50. Minimization is Harder in the Prophet World. Vasilis Livanos, and Ruta Mehta. In *Proceedings of the ACM-SIAM Symposium on Discrete Algorithms (SODA24)*, 2024.

*C49, Incentives in Federated Learning: Equilibria, Dynamics, and Mechanisms for Welfare Maximization. Aniket Murhekar, Zhuowen Yuan, Bhaskar Ray Chaudhury, Bo Li, and Ruta Mehta. In *Proceedings of the 38th Conference on Neural Information Processing Systems (NeurIPS)*, 2023.

*C48. EFX: A Simpler Approach, and an (Almost) Optimal Guarantee via Rainbow Cycle Number. Hannaneh Akrami, Noga Alon, Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, and Ruta Mehta. In *Proceedings of the 24th Conference on Economics and Computation (EC)*, 2023.

*C47. Fair and Efficient Allocation of Chores with Surpluses. Hannaneh Akrami, Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, and Ruta Mehta. In *Proceedings of the THE 32nd International Joint Conference on Artificial Intelligence (IJCAI)*, 2023.

*C46. Approximate MMS Allocations under Assignment Valuations. Pooja Kulkarni, Rucha Kulkarni, and Ruta Mehta, In *Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2023.

*C45. Fairness in Federated Learning via Core-Stability. Bhaskar Ray Chaudhury, Linyi Li, Mintong Kang, Bo Li, Ruta Mehta. In *Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS)*, 2022 **(Invited for the Spotlight or equivalent)**. (25% AR)

*C44. Competitive Equilibrium with Chores: Combinatorial Algorithm and Hardness. Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta, and Peter McGlaughlin, In *Proceedings of the 23rd ACM Conference on Economics and Computation (EC)*, 2022. (27% AR)

*C43. (Almost) Envy-Free, Proportional and Efficient Allocations of an Indivisible Mixed Manna. Vasileios Livanos, Ruta Mehta, and Aniket Murhekar. In *Proceedings of the 21st International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, 1678–1680, 2022. (26% AR)

*C42. On the Existence of Competitive Equilibrium with Chores. Bhaskar Ray Chaudhury, Jugal Garg, Peter McGlaughlin, and Ruta Mehta. In *Proceedings of the 13th Innovations in Theoretical Computer Science Conference (ITCS)*, 41:1–41:13, 2022. ()

*C41. Polynomial Time Algorithms to Find an Approximate Competitive Equilibrium for Chores. Shant Boodaghians, Bhaskar Ray Chaudhury, and Ruta Mehta. In *Proceedings of the 2022 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2285–2302, 2022. (30% AR)

*C40. Indivisible Mixed Manna: On the Computability of MMS + PO Allocations. Rucha Kulkarni, Ruta Mehta, and Setareh Taki. In *Proceedings of the 22nd ACM Conference on Economics and Computation (EC)*, 683–684, 2021. (26% AR)

*C39. Improving EFX Guarantees through Rainbow Cycle Number. Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, and Pranabendu Misra. In *Proceedings of the 22nd ACM Conference on Economics and Computation (EC)*, 310–311, 2021. (26% AR)

*C38. Competitive Allocation of a Mixed Manna. Bhaskar Ray Chaudhury, Jugal Garg, Peter McGlaughlin, and Ruta Mehta. In *Proceedings of the 32nd Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 1405–1424, 2021. (28% AR)

*C37. On the PTAS for Maximin Shares in an Indivisible Mixed Manna. Rucha Kulkarni, Ruta Mehta, and Setareh Taki. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI)*, 5523–5530, 2021. (21% AR)

*C36. Fair and Efficient Allocations under Subadditive Valuations. Bhaskar Ray Chaudhury, Jugal Garg, and Ruta Mehta. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI)*, 5269–5276, 2021. (21% AR)

*C35. Online Revenue Maximization for Server Pricing. Shant Boodaghians, Federico Fusco, Stefano Leonardi, Ruta Mehta, and Yishay Mansour. In *Proceedings of the 29th International Joint Conference on Artificial Intelligence (IJCAI)*, 4106–4112, 2020. (12.6% AR)

*C34. Approximate Nash Equilibria of Imitation Games: Algorithms and Complexity. Aniket Murhekar and Ruta Mehta. In *Proceedings of the 19th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, 887–894, 2020. (23% AR)

*C33. Smoothed Efficient Algorithms and Reductions for Network Coordination Games. Shant Boodaghians, Rucha Kulkarni, and Ruta Mehta. In *Proceedings of the 11th Innovations in Theoretical Computer Science Conference (ITCS)*, 73:1–73:15, 2020. (42% AR)

*C32. Multiclass Performance Metric Elicitation. Gaurush Hiranandani, Shant Boodaghians, Ruta Mehta, and Oluwasanmi Koyejo. In *Proceedings of the 23rd conference on Neural Information Processing Systems (NeurIPS)*, 9351–9360, 2019. (21% AR)

*C31. Unique End of Potential Line. John Fearnley, Spencer Gordon, Ruta Mehta, and Rahul Savani. In *Proceedings of the 46th International Colloquium on Automata, Languages and Programming (ICALP)*, 56:1–56:15, 2019. (29% AR)

*C30. Eliciting Binary Performance Metrics. Gaurush Hiranandani, Shant Boodaghians, Ruta Mehta, and Oluwasanmi Koyejo. In *Proceedings of the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, 371–379, 2019. (32% AR)

C29. Universal Growth in Production Economies. Simina Branzei, Ruta Mehta, and Noam Nisan.In *Proceedings of the 32nd Conference on Neural Information Processing Systems (NeurIPS)*, 1973–1973, 2018. (21% AR)

*C28. Social Welfare and Profit Maximization from Revealed Preferences. Ziwei Ji, Ruta Mehta, and Matus Telgarsky. In *Proceedings of the 14th Conference on Web and Internet Economics (WINE)*, 264–281, 2018. (30% AR)

*C27. Nash Equilibrium Computation in Resource Allocation Games. Shivam Gupta and Ruta Mehta. In *Proceedings of the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 1953–1955, 2018. (18% AR)

C26. Sum-of-Squares Meets Nash: Lower Bounds for Finding Any Equilibrium. Pravesh Kothari and Ruta Mehta. In *Proceedings of the 50th Annual Symposium on the Theory of Computation (STOC)*, 1241–1248, 2018. (26% AR)

C25. Maximizing Profit with Convex Costs in the Random-order Model. Anupam Gupta, Ruta Mehta, and Marco Molinaro. In *Proceedings of the 45th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2018. (28% AR)

C24. A New Class of Combinatorial Markets with Covering Constraints: Algorithms and Applications. Nikhil Devanur, Jugal Garg, Ruta Mehta, Vijay V. Vazirani, and Sadra Yazdanbod. In *Proceedings of the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2311–2325, 2018. (33% AR)

C23. Settling the Complexity of Leontief and PLC Exchange Markets under Exact and Approximate Equilibria. Jugal Garg, Ruta Mehta, Vijay V. Vazirani and Sadra Yazdanbod. In *Proceedings of the 49th Annual ACM SIGACT Symposium on Theory of Computing (STOC)*, 890–901, 2017. (24% AR)

C22. Mutation, Sexual Reproduction and Survival in Dynamic Environments. Ruta Mehta, Ioannis Panageas, Georgios Piliouras, Prasad Tetali, and Vijay V. Vazirani. In *Proceedings of the 8th Innovations in Theoretical Computer Science Conference (ITCS)*, 2017. (35% AR)

C21. Nash Social Welfare Approximation for Strategic Agents. Simina Branzei, Ruta Mehta, and Vasilis Gkatzelis. In *Proceedings of the 2017 ACM Conference on Economics and Computation (EC)*, 611–628, 2017. (29% AR)

C20. An Incentive Compatible, Efficient Market for Air Traffic Flow Management. Ruta Mehta and Vijay V. Vazirani. In *Proceedings of the 23rd International Computing and Combinatorics Conference (COCOON)*, 407–419. Springer, 2017. (43% AR) *Invited to a special issue of Theoretical Computer Science (TCS).*

C19. Multilinear Games. Hau Chu, Albert Jiang, Kevin Leyton-Brown, and Ruta Mehta. In *Proceedings of the 12th International Conference on Web and Internet Economics (WINE)*, 44-58. Springer Berlin Heidelberg, 2016. (39% AR)

C18. The Complexity of Genetic Diversity: Sex with Two Chromosomes is Advantageous but Unpredictable. Ruta Mehta, Ioannis Panageas, Georgios Piliouras and Sadra Yazdanbod. In *Proceedings of the 24th Annual European Symposium on Algorithms (ESA)*, 65:1–65:17, 2016. (27% AR)

C17. Get Me to My GATE On Time: Efficiently Solving General-Sum Bayesian Threat Screening Games. Aaron Schlenker, Matthew Brown, Arunesh Sinha, Milind Tambe, and Ruta Mehta. In *Proceedings of the 22nd European Conference on Artificial Intelligence (ECAI)*, 1476–1484, 2016. (27% AR)

C16. To Give or not to Give: Fair Division with Strict Preferences. Simina Branzei, Yuezhou Lv, and Ruta Mehta. In *Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI)*, 123–129, 2016. (24% AR)

C15. ETR-Completeness of Decision Versions of 3-Nash. Jugal Garg, Ruta Mehta, Vijay V. Vazirani and Sadra Yazdanbod. In *Proceedings of the 42nd International Colloquium on Automata, Languages, and Programming (ICALP)*, 554–566, 2015. (28% AR)

C14. Natural Selection as an Inhibitor of Genetic Diversity: Multiplicative Weights Update Algorithm and a Conjecture of Haploid Genetics. Ruta Mehta, Ioannis Panageas, and Georgios Piliouras. In *Proceedings of the 2015 Conference on Innovations in Theoretical Computer Science (ITCS)*, 73–73, 2015. (28% AR)

C13. Settling Some Open Problems on Symmetric Nash Equilibria. Ruta Mehta, Vijay V. Vazirani, and Sadra Yazdanbod. In *8th International Symposium on Algorithmic Game Theory (SAGT)*, 272–284, 2015. (34% AR)

C12. Constant Rank Bimatrix Games are PPAD-hard. Ruta Mehta. In *Proceedings of the 46th Annual ACM Symposium on Theory of Computing (STOC)*, 545–554, 2014. **Invited to a special volume of the SIAM Journal on Computing (SICOMP) dedicated to the best papers of STOC'14.** (29% AR)

C11. Dichotomies in equilibrium computation, and complementary pivot algorithms for a new class of non-separable utility functions. Jugal Garg, Ruta Mehta, and Vijay V. Vazirani. In *Proceedings of the 46th Annual ACM Symposium on Theory of Computing (STOC)*, 525–534, 2014. (29% AR)

C10. Learning Economic Parameters from Revealed Preferences. Maria-Florina Balcan, Amit Daniely, Ruta Mehta, Ruth Urner, and Vijay V. Vazirani. In *Proceedings of the 10th International Conference on Web and Internet Economics (WINE)*, 338–353, 2014. (29% AR)

C9. To Save Or Not To Save: The Fisher Game. Ruta Mehta, Nithum Thain, Laszlo A. Vegh, and Adrian Vetta. In *Proceedings of the 10th International Conference on Web and Internet Economics (WINE)*, 294–307, 2014. (29% AR)

C8. Towards Polynomial Simplex-Like Algorithms for Market Equilibria. Jugal Garg, Ruta Mehta, Milind Sohoni and Nisheeth Vishnoi. In *Proceedings of the 24th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 1226–1242, 2013. (29% AR)

C7. Exchange Markets: Strategy meets Supply-Awareness. Ruta Mehta, and Milind Sohoni. In *Proceedings of the 9th International Conference on Web and Internet Economics (WINE)*, 361–362, 2013. (24% AR)

C6. A Complementary Pivot Algorithm for Market Equilibrium under Separable, Piecewise-Linear Concave Utilities. Jugal Garg, Ruta Mehta, Milind Sohoni and Vijay V. Vazirani. In *Proceedings of the 44th annual ACM symposium on Theory of computing (STOC)*, 525–534, 2012. (29% AR)

C5. The Weighted Majority Algorithm does not Converge in Nearly Zero-sum Games. Maria Florina Balcan, Florin Constantin, and Ruta Mehta. In *ICML 2012 workshop on Markets Mechanisms and Multi-Agent Models*, 2012. (27% AR)

C4. Rank-1 Bimatrix Games: A Homeomorphism and a Polynomial Time Algorithm. Bharat Adsul, Jugal Garg, Ruta Mehta, and Milind Sohoni. In *Proceedings of the 43rd annual ACM symposium on Theory of computing (STOC)*, 195–204, 2011. **Invited to the Games & Economic Behavior (GEB) Special Issue for STOC/FOCS/SODA 2011.** (28% AR)

C3. Bilinear Games: Polynomial Time Algorithms for Rank Based Subclasses. Jugal Garg, Albert X. Jiang, and Ruta Mehta. In *7th International Workshop on Internet and Network Economics (WINE)*, 399–407, 2011. (31% AR)

C2. Nash Equilibria in Fisher Market. with Bharat Adsul, Ch. Sobhan Babu, Ruta Mehta, Jugal Garg, and Milind Sohoni. In *Proceedings of the 3rd International Symposium on Algorithmic Game Theory (SAGT)*, 30–41, 2010. **Invited to the ACM Transactions on Computer Systems (TOCS) Special Issue for SAGT 2010.** (42% AR)

C1. A Simplex-like Algorithm for Fisher Markets. Bharat Adsul, Ch. Sobhan Babu, Jugal Garg, Ruta Mehta, and Milind Sohoni In *Proceedings of the 3rd International Symposium on Algorithmic Game Theory (SAGT)*, 18–29, 2010. (42% AR)

Refereed Journal Papers

J16. Competitive Equilibrium for Chores: from Dual Eisenberg-Gale to a Fast, Greedy, LP-based Algorithm. Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta, and Tianlong Nan. *Mathematics of Operations Research (MoR).* (major revision).

*J15. Polynomial Time Algorithm to Find an Approximate Competitive Equilibrium for Chores. Shant Boodaghians, Bhaskar Ray Chaudhury, and Ruta Mehta. *Operations Research (OR)* (minor revision).

*J14. EFX: A Simpler Approach and an (Almost) Optimal Guarantee via Rainbow Cycle Number. Hannaneh Akrami, Noga Alon, Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta: *Operations Research (OR) 73(2): 738-751 (2025).*

*J13. Improving Envy Freeness up to Any Good Guarantees Through Rainbow Cycle Number. Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, Pranabendu Misra. *Mathematics of Operations Research (MOR) 49(4): 2323-2340 (2024).*

*J12. Competitive Allocation of a Mixed Manna. Bhaskar Ray Chaudhury, Jugal Garg, Peter McGlaughlin, and Ruta Mehta. *Mathematics of Operations Research (MOR). 48(3): 1630-1656 (2023).*

*J11. Online Revenue Maximization for Server Pricing. Shant Boodaghians, Federico Fusco, Stefano Leonardi, Yishay Mansour, and Ruta Mehta. *Auton. Agents Multi Agent Syst. 36(1): 11 (2022).*

J10. Nash Social Welfare Approximation for Strategic Agents. Simina Branzei, Vasilis Gkatzelis, and Ruta Mehta. *Operations Research, 70(1): 402-415 (2022).*

J9. Fast Algorithms for Rank-1 Bimatrix Games. Bharat Adsul, Jugal Garg, Ruta Mehta, Milind Sohoni, and Bernhard von Stengel. *Operations Research, 69(2): 613–631 (2021).*

*J8. Unique End of Potential Line. John Fearnley, Spencer Gordon, Ruta Mehta, and Rahul Savani. *Journal of Computation and System Sciences (JCSS), 114:1–35 (2020).*

J7. An incentive compatible, efficient market for air traffic flow management. Ruta Mehta and Vijay V. Vazirani. *Theoretical Computer Science (TCS), 818: 41—50 (2020).* **(invited)**

J6. Constant Rank Bimatrix Games are PPAD-hard. Ruta Mehta. *SIAM Journal on Computing, 47(5): 1858–1887 (2018). Special Section on the 46th Annual ACM Symposium on Theory of Computing (STOC 2014).* (**invited**)

J5. Substitution with Satiation: A New Class of Utility Functions and a Complementary Pivot Algorithm. Jugal Garg, Ruta Mehta, and Vijay Vazirani. *Mathematics of Operations Research, 43(3): 996–1024 (2018).*

J4. Jugal Garg, Ruta Mehta, Vijay Vazirani, and Sadra Yazdanbod. `ETR`-Completeness for Decision Versions of Multi-Player (Symmetric) Nash Equilibria. *ACM Transactions on Economics and Computation, 6(1): 1:1–1:23 (2018).*

J3. Dichotomies in Equilibrium Computation, and Membership of PLC markets in `FIXP`. Jugal Garg, Ruta Mehta, and Vijay Vazirani. *Theory of Computing, 12(1): 1–25 (2016).*

J2. A Complementary Pivot Algorithm for Market Equilibrium under Separable, Piecewise-Linear Concave Utilities. Jugal Garg, Ruta Mehta, Milind Sohoni, and Vijay Vazirani. *SIAM Journal on Computing 44(6): 1820–1847 (2015).*

J1. A Simplex-like Algorithm for Fisher Markets. Bharat Adsul, Ch. Sobhan Babu, Jugal Garg, Ruta Mehta and Milind Sohoni. *Current Science, 103(9): 1033–1042 (2012).*

SERVICE (selected)

1. **Editorial boards**

   (a) Associate Editor, Mathematics of Operations Research (MOR) 2020 - present

   (b) Associate Editor, Algorithmica 2023 - present

   (c) Guest Editor, ACM Transactions on Economics and Computation (TEAC) for the special issue of the 16th Conference on Web and Internet Economics (WINE), 2020..

2. **Chair**

   (a) Program Committee Chair, 45th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), Track A, 2025.

   (b) Program Committee Track Chair, ACM Conference on Economics and Computation (EC), 2025.

   (c) Program Committee Co-Chair, 16th Conference on Web and Internet Economics (WINE), 2020.

   (d) Area Chair, 24th ACM Conference on Economics and Computation (EC), 2023.

   (e) Area Chair, 22nd ACM Conference on Economics and Computation (EC), 2021.

   (f) Tutorial Chair, 13th Conference on Web and Internet Economics (WINE), 2017.

3. **Workshop/Event/Conference Organization**

   (a) Co-organizing **New Pepspectives on Algorithmic Game Theory**, co-located with the Stonybrook Game Theory Conference, July 16 – 17, 2026.

   (b) Co-organizing **Data Economies** Summer Workshop at TTIC, 2027.

   (c) Co-organizing **AImpact Workshop** as part of the AImpact Center, 2026.

   (d) Co-organizing the **AImpact Seminar** Series, 2025-present.

   (e) Co-organized the Dagstuhl Workshop on **Fair Division: Algorithms, Solution Concepts, and Applications**, 2024.

   (f) Co-organized **Equilibrium Computation@EC** workshop at ACM Conference on Economics and Computation (EC), 2023.

   (g) Co-organized a **Mini-Symposium on Algorithmic Game Theory** at CanaDAM, June 2023.

   (h) Co-organized **EC Mentoring Workshop** in 2022 and 2018. It is a student mentoring workshop co-located with ACM Conference on Economics and Computation (EC).
   (**Conceptualized and started this workshop in 2018 that has now become a part of EC.**)

   (i) **Job Market Panel**, EC Mentoring workshop, 2021.

   (j) Co-organized **Rising Stars in EECS,** 2019, held at University of Illinois at Urbana-Champaign. This is a reoccurring prestigious mentoring workshop for women PhD students interested in academia.

   (k) Co-organized a session on **Career Advice for Graduate Students,** 2017, at the 18th ACM Conference on Economics and Computation (EC), MIT.

   (l) Co-organized **Game Theory Workshop,** Dec 14 - 17, 2015, as a part of the Combinatorial Optimization trimester at Hausdorff Center for Mathematics, Universität Bonn, Germany.

   (m) Served on the organizing team of the Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2011.

4. **Committees**

   (a) PC Member of Foundations of Theoretical Compute Science (FOCS) 2026

   (b) Senioer PC Member of the International Conference on Economics and Computation (EC) 2026.

   (c) Area chair of the International Conference on Economics and Computation (EC) 2024.

(d) PC Member of EATCS International Colloquium on Automata, Languages, and Programming (ICALP) 2024

(e) PC member of SIAM Symposium on Simplicity in Algorithms (SOSA) 2023

(f) PC member of ACM Conference on Economics and Computation (EC) 2022

(g) Committee member of Spotlight beyond WINE 2021

(h) Senior PC member of The Web Conference (formerly known as World Wide Web Conference), Economics, Monetization, and Online Markets track. 2022

(i) PC member of Innovations in Theoretical Computer Science (ITCS) 2022

(j) PC member of ACM Symposium on Theory of Computing (STOC) 2021

(k) Senior PC member of ACM Conference on Economics and Computation (EC) 2020

(l) PC member of AAAI Conference on Artificial Intelligence (AAAI) 2020

(m) Senior PC member of ACM Conference on Economics and Computation (EC) 2019

(n) PC member of International Colloquium on Automata, Languages, and Programming (ICALP) 2019

(o) PC member of Innovations in Theoretical Computer Science (ITCS) 2018

(p) PC member of World Wide Web Conference (WWW) 2018

(q) Senior PC member of ACM Conference on Economics and Computation (EC) 2018

(r) PC member of Symposium on Discrete Algorithms (SODA) 2017

(s) PC member of Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2017

(t) PC member of ACM Conference on Economics and Computation (EC) 2017

(u) PC member of Innovations in Theoretical Computer Science (ITCS) 2016

(v) PC member of Symposium on Algorithmic Game Theory (SAGT) 2016

(w) PC member of ACM Conference on Economics and Computation (EC) 2016

(x) PC member of Annual IEEE Symposium on Foundations of Computer Science (FOCS) 2015

(y) PC member of Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2015

(z) PC member of World Wide Web Conference (WWW) for posters 2015

5. **Department Committees:**

(a) CS CARES, Chair (2025-present)

(b) Grainger College of Engineering, Council for Community, Opportunity, and Engagement (CCOE) (2025-present)

(c) Grainger College of Engineering DEI Committee (representing CSL) (2023-2024)

(d) CS Advisory Committee (2023-2024)

(e) CS CARES, Vice Chair (2023-2024)

(f) Broadening Participation Committee (BPC) (2022-2023)

(g) Faculty Recruiting, At-Large Secondary Committee (2022-2023)

(h) CS CARES Committee (2020-2023)

(i) Faculty Recruiting, At-Large Secondary Committee (2021-2022)

(j) Theory Qual Committee (Fall'2021, Spring'2017)

(k) Graduate Study Committee (2019-2020)

(l) CS Diversity Committee (2018-2019)

(m) Outreach Committee (2017-2019)

(n) Undergraduate Study Committee (2016-2019)

6. **Ph.D. Thesis Committees:**

(a) Ruta Sirish Jawale, 2025 (University of Illinois at at Urbana-Champaign, Advisor: Dakshita Khurana).

(b) Raunak Sengupta, 2025 (University of Illinois at at Urbana-Champaign, Advisors: Rakesh Nagi, Ramavarapu S Sreenivas).

(c) Eklavya Sharma, 2025 (University of Illinois at at Urbana-Champaign, Advisor: Jugal Garg)

(d) John Qin, 2024 (University of Illinois at at Urbana-Champaign, Advisor: Jugal Garg)

(e) Kasper Hogh, 2023 (Arhus Univeristy, Denmark. Advisor: Prof. Kristoffer Arnsfelt Hansen).

(f) Ian Laudden, 2023 (University of Illinois at Urbana-Champaign, Advisor: Sheldon Jacobson).

(g) Setareh Taki, 2021 (University of Illinois at Urbana-Champaign, Advisor: Jugal Garg).

(h) Sadra Yazdanbod, 2018 (Georgia Tech, Advisor: Vijay Vazirani).

(i) Haiming Jin, 2017 (University of Illinois at Urbana-Champaign, Advisor: Klara Nahrstedt).

(j) Vivek Madan, 2017 (U. of I. at Urbana-Champaign, Advisor: Chandra Chekuri).

(k) Ioannis Panageas, 2016 (Georgia Tech, Advisor: Prasad Tetali).

(l) Eric Chastain, 2016 (Rutgers University, Advisor: Eric Allender).

Student Research Advising

- Postdocs
  - Vishnu Narayanan 2025
    (Now an Assistant Professor of Computer Science, IIT-Bombay)
  - Bhaskar Ray Chaudhury (*Future Faculty Fellow*) 2021 - 2023
    (Now Assistant Professor, Dept. of Industrial and Systems Engineering (ISE) at University of Illinois at Urbana-Champaign)
- Ph.D. students
  - Aniket Murhekar 2020-2025
    Thesis: Algorithms and Solution Concepts for Allocation and Collaboration
    (Simons Postdoctoral Fellow, Mavis Future Faculty Fellow, and Chicago Junior Theorist)
    Now a Postdoc at Northwestern (Had received a two-year postdoc@Harvard, however it was nullified due to the funding issues). Simons Postdoc in Spring'26.
  - Pooja Kulkarni 2020-2025
    Thesis: Foundations of Fair Division for Beyond-Additive and Online Settings
    Postdoc at Northwestern → Postdoc at U. Chicago.
  - Vasileios Livanos 2018 - 2023
    Thesis: Optimal Stopping Problems and Combinatorial Optimization Under Uncertainty
    Postdoc at Universidad de Chile → Postdoc at USC.
  - Rucha Kulkarni 2017 - 2023
    Thesis: Fair Division of Indivisibles through Computational Lens
    Postdoc at NUS
  - Shant Boodaghians 2016 - 2021
    Thesis: Search and optimization with randomness in computational economics: equilibria, pricing, and decisions
    Now at VIRTU Financial Inc.

- Masters students
  - Aniket Murhekar 2019 - 2020
    Thesis: Algorithms and Complexity Results for Problems on Fair Division and Imitation Games
    (Won the *Siebel Scholar Award 2020*. Went on to pursue a Ph.D. at the University of Illinois at Urbana-Champaign)
  - Spencer Gordon 2016 - 2017
    Thesis: The Complexity of Continuous Local Search
    (Won the *Siebel Scholar Award 2017*. Went on to pursue a Ph.D. at the California Institute of Technology)
- Undergraduate students (selected)
  - Yunho Chang 2025-present
    (Working on trustworthy federated learning)
  - Aditya Arya 2025-present
    (Working on developing a fairdivision app)
  - Anh Fung 2024-2025
    (Worked on Sellers' Game in Markets)
  - Annie Zhang 2023-2024
    (Worked on EFX orientation, and co-authored a paper in the *International Conference on Autonomous Agents Multiagent Systems (AAMAS), 2025* (an A^* AI conference))
  - Kyra Gunluck (Cornell University) Summer'23
    (Worked on the MMS problem for the fairdivision of chores)
  - Arjun Agrawal Summer'23
    (Worked on the MMS problem for the fairdivision of chores)
  - Wenxiao Yang 2022-2023
    Thesis: Design Royalty Payments Policy in Non-Fungible Token Markets: Tackling Adverse Selection with Smart Contracts
    (An Economics + Mathematics undergrad. Joining UC Berkley as a Ph.D. student)
  - Shreya Patil Spring 2021
    Worked on implementing algorithms to find fair allocation of scarce resources.
  - Shivam Gupta 2017 - 2018
    Worked on Blotto Games on Network and co-authored a paper in the *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)* 2018.
    (Franz Hohn and JP Nash scholarship 2015 - 16, Illinois engineering scholarship 2017-18. Now a PhD student at UT Austin.)
- Highschool students
  - Maya Vishwanathan 2023-2024
    (Worked on EFX, and published and presented a paper in AMAAS 2024. Now an undergrad in CS@Yale).

Teaching

- **CS 374:** Introduction to Algorithms & Models of Computation ($\sim$ 450 students), Spring 2026, Spring 2024, Spring 2022, Spring 2020. An undergrad course that I co-teach at the University of Illinois at Urbana-Champaign.
- **CS 473:** Algorithms ($\sim$ 70 students), Spring 2021, Spring 2018, Fall 2016. An undergrad++ course that I teach at the University of Illinois at Urbana-Champaign.

- **CS 598TH1:** Recent Advances in Theoretical CS: Spring 2023. A graduate course that I designed and taught at the University of Illinois at Urbana-Champaign.
- **CS 580 / CS 598RM:** Topics on Algorithmic Game Theory, Fall 2025, Fall 2023, Fall 2022, Fall 2021, Fall 2020, Fall 2019, Fall 2018, Spring 2017, Spring 2016. Graduate courses that I designed and now teach at regular intervals at the University of Illinois at Urbana-Champaign. (**Listed in the Instructors rated as Excellent by students, 2021 and 2017**).
- **CS 8803:** Advanced Topics in Algorithmic Game Theory, Spring 2013. A graduate course that I co-taught at the Georgia Institute of Technology.

Selected Invited Talks.

Information in Games and Mechanisms Workshop, FSTTCS'25	Dec 2025
ACO Seminar, Georgia Tech	Nov 2025
OR Seminar, Business School, UIUC	Oct 2025
CS Seminar, Oxford University, UK	May 2025
CS Seminar, U. of Liverpool, UK	May 2025
CS Seminar, Indian Institute of Technology, Gandhinagar	Jan 2025
exSPLORe2025 Workshop, Ashoka University	Jan 2025
AI Seminar at Indian Institute of Technology, Bombay	Oct 2024
Theory Seminar at Tata Institute of Fundamental Research	Oct 2024
Dagstuhl Workshop on Fair Division	Oct 2024
EC'24 Workshop on New Directions in Social Choice	July 2024
CS Theory Seminar, UC Irvine	May 2024
Workshop on Algorithms for Learning and Economics (WALE) (keynote)	June 2024
SLMath workshop Randomization, Neutrality, and Fairness	Oct 2023
Workshop in the honor of Mihalis Yannakakis' 70th Birthday, Columbia Univerisity.	Aug 2023
Mini-Symposium on Games and Learning at CanaDAM, Winnipeg.	June 2023
CS Theory Seminar, Dept. of Computer Science, Duke Univeristy.	April 2023.
Theory CS seminar at Instytut Informatyki Analitycznej, Uniwersytetu Jagiellonian.	April 2023.
Multi-Agent Systems Workshop at Bellairs, Barbados (invited).	March 2023
Workshop on Recent Advances on Total Search Problems in conjunction with the 50th International Colloquium on Automata, Languages and Programming, Paris, France.	July 2022
Algorithms, Dynamics, and Information Flow in Networks (ADYN) Seminar, Germany (virtual), `https://adyn.cs.uni-frankfurt.de/index.php`.	June 2022
Theory Seminar, Dept. of Computer Science, Cornell University.	May 2022
C3.AI Digital Transformation Institute Colloquium on Digital Transformation (virtual).	April 2022
Algorithms and Complexity Seminar, Dept. of EECS, MIT (virtual).	April 2022

Theory Seminar, Dept. of Computer Science, University of Washington (virutal). April 2022

EconCS Seminar, Harvard University (virtual). March 2022

Israel Algorithmic Game Theory (IAGT) Seminar, Israel (virtual), `https://sites.google.com/view/iagtseminar`. March 2022

Chennai Mathematical Institute, Scholastic Test of Excellence in Mathematical Sciences (STEMS) Lecture (virtual). Feb 2022

CS Colloquium, Dept. of Computer Science, Purdue University. Nov 2021

Decision and Control Seminar, Coordinated Science Lab, University of Illinois at Urbana-Champaign. Oct 2021

Columbia University, Theory seminar (virtual). Oct 2021

Industrial and Enterprise Systems Engineering (ISE) seminar, University of Illinois at Urbana-Champaign (UIUC). Oct 2021

Fair Resource Allocation: Concepts, Algorithms and Complexity (FaiRACAC) workshop, co-located with EC. June 2021

Keynote talk at the 13th Symposium on Algorithmic Game Theory (SAGT). Sept 2020

21st Max Planck Advanced Course on the Foundations of Computer Science (ADFOCS). **(one of three speakers at this yearly summer school)** Aug 2020

Research on Algorithms and Incentives in Networks (RAIN) Seminar, Stanford University. Oct 2020

Complexity of Algorithmic Game Theory workshop. Dec 2019

Institute Colloquium, Toyota Technological Institute at Chicago (TTIC). Oct 2019

Algorithms and Uncertainty Reunion Workshop, Simons Institute, UC Berkeley. Dec 2018

Algorithms and Randomness Workshop, Algorithms, and Randomness Center, Georgia Institute of Technology. May 2018

COST Workshop on Algorithmic Game Theory, Rome, Italy. Mar 2018

Algorithms and Optimization Workshop, International Center for Theoretical Sciences (ICTS), Bangalore. Jan 2018

Economics and Computation Reunion Workshop, Simons Institute, UC Berkeley. Apr 2017

67th Midwest Theory Day, Indiana University Bloomington. Mar 2017

Bellairs Workshop on Algorithmic Game Theory, Barbados. Apr 2016

Econ-CS Seminar, Duke University. Mar 2016

Keynote talk at the Game Theory Workshop at HIM, Universitat Bonn. Dec 2015

International Symposium on Mathematical Programming, Pittsburgh. Jul 2015

Mathematics of Information Seminar, Dept. of Computer Science, California Institute of Technology. Jan 2015

Institute Colloquium, Toyota Technological Institute at Chicago (TTIC). Oct 2014

Algorithms, Combinatorics and Optimization (ACO) Student Seminar, College of Computing, Georgia Institute of Technology. Nov 2014

Theory Seminar, Dept. of Computer Science, University of Chicago.	Oct 2014
Dagstuhl Seminar on Equilibrium Computation, Germany.	Aug 2014
Keynote talk at the Bellairs Workshop on Algorithmic Game Theory, Barbados.	Apr 2014
Algorithms and Complexity Seminar, Dept. of EECS, MIT.	Nov 2013
ESRC workshop on Algorithmic Game Theory, London School of Economics (LSE).	Oct 2013
Workshop on Computational Game Theory, Stony Brook.	July 2013
Theory Seminar, Dept. of EECS, UC Berkeley.	Apr 2013
Algorithms, Combinatorics and Optimization (ACO) Colloquium, Georgia Tech.	Apr 2013
China Theory Week 2012, Aarhus University.	Aug 2012
Mysore Park Theory Workshop 2012, Mysore, India.	Aug 2012
IEOR Seminar, Dept. of Industrial Engineering and Operations Research (IEOR), Indian Institute of Technology Bombay, India.	Feb 2011