Ruta Mehta

3218 Siebel Center, 201 N Goodwin Ave
Dept. of Computer Science
Coordinated Science Laboratory (Affiliate)
Univ. of Illinois at Urbana-Champaign
Urbana, IL 61801, USA

+1-2173004650
rutamehta@cs.illinois.edu
http://rutamehta.cs.illinois.edu

Academic Interests

My research is primarily in theoretical computer science. It looks at the fundamental solution concepts from economics, game theory, and social choice from the computational lens, and addresses questions from fair computation using these concepts. I am particularly passionate about the latter given my personal brush with societal biases and resulting unfairness while growing up. I am trying to use computation to aid in achieving fairness (fairness through computation), as well as address the fairness issues arising due to computer-aided decision making (fairness in computation).
In addition, I actively reach out to underrepresented minorities with mentoring activities, such as mentoring workshops, mentoring panels/lunches, broadening participation activities with K-12 students, and direct involvement in research.

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

Maharaja Saiyajirao University (MSU) — Baroda, India
B.E. in Computer Engineering — 1999 - 2003

Appointments

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

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

Honors and Awards (selected)

- Placed on the "*List of Instructors Rated as Excellent by Their Students*", Fall 2021, Spring 2017.
- NSF CAREER Award, 2018.
- Simons-Berkeley Research Fellow, 2015.
- Outstanding Postdoctoral Researcher Award, College of Computing, Georgia Tech, 2014.
- Rising Stars in EECS, 2013.
- Naik and Rastogi Excellence in Ph. D. Thesis Award, IIT-Bombay, 2013.

- ACM India Doctoral Dissertation Award, 2012.
- Invited to China Theory Week, Aarhus University, 2012.
- Google India Anita Borg Memorial Scholarship, 2012.
- IBM PhD Award, 2010.

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

Preprints

*P1. Improved Fairness for Low Heterogeneity. Bhaskar Ray Chaudhury, Bo Li, Ruta Mehta, and Ariel Procaccia, 2022.

*P2. Query Complexity Lower Bounds for the Banach's Contraction Map. John Fearnley, Spencer Gordon, Ruta Mehta, and Rahul Savani. 2022.

*P3. Approximate MMS Allocations under Assignment Valuations. Pooja Kulkarni, Rucha Kulkarni, and Ruta Mehta, 2022 (under submission).

*P4. Approximating APS Under Submodular and XOS Valuations with Binary Marginals. Pooja Kulkarni, Rucha Kulkarni, and Ruta Mehta, 2022 (under submission).

*P5. EFX Allocations: Simplifications and Improvements. Hannaneh Akrami, Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, and Ruta Mehta, 2022 (under submission).

*P6. Prophet Inequalities for Minimizing Costs. Vasilis Livanos and Ruta Mehta, 2022 (under submission).

Refereed Conference Papers

*C45. Fairness in Federated Learning via Core-Stability. Bhaskar Ray Chaudhury, Linyi Li, Mintong Kang, Bo Li, Ruta Mehta. Accepted to 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

*J14. Polynomial Time Algorithm to Find an Approximate Competitive Equilibrium for Chores. Shant Boodaghians, Bhaskar Ray Chaudhury, and Ruta Mehta. *Operations Research (OR)* (minor revision).

*J13. Improving EFX Guarantees Through Rainbow Cycle Number. Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, Pranabendu Misra. *Mathematics of Operations Research (MOR)* (major revision)

*J12. Competitive Allocation of a Mixed Manna. Bhaskar Ray Chaudhury, Jugal Garg, Peter McGlaughlin, and Ruta Mehta. Accepted to *Mathematics of Operations Research (MOR).*

*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).*

SERVICES (selected)

1. **Associate Editor, Mathematics of Operations Research (MOR)** 2020 - present
2. **Guest Editor, ACM Transactions on Economics and Computation (TEAC)** for the special issue of WINE 2020.
3. **Program Committee Co-Chair, 16th Conference on Web and Internet Economics (WINE)**, 2020.
4. **Area Chair, 22nd ACM Conference on Economics and Computation (EC)**, 2021.
5. **Tutorial Chair, 13th Conference on Web and Internet Economics (WINE)**, 2017.
6. **Panels and Workshop/Event/Conference Organization**
   (a) Co-organizing a Mini Symposium on Algorithmic Game Theory at CanaDAM, June 2023.
   (b) 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.**)
   (c) **Job Market Panel**, EC Mentoring workshop, 2021.
   (d) Co-organized **Rising Stars in EECS,** 2019, held at U. of I. at Urbana-Champaign. A mentoring workshop for women PhD students interested in academia.
   (e) Co-organized a session on **Career Advice for Graduate Students,** 2017, at the 18th ACM Conference on Economics and Computation (EC), MIT.
   (f) Co-organized **Game Theory Workshop,** Dec 14 - 17, 2015, as a part of Combinatorial Optimization trimester at Hausdorff Center for Mathematics, Universität Bonn, Germany.

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

7. **Committees**

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

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

(c) Committee member of Spotlight beyond WINE 2021

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

8. **Department Committees:**

(a) Broadening Participation Committee (BPC) (2022-present)

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

(c) CS CARES Committee (2020-present)

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

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

(f) Graduate Study Committee (2019-2020)

(g) CS Diversity Committee (2018-2019)

(h) Outreach Committee (2017-2019)

(i) Undergraduate Study Committee (2016-2019)

9. **Ph.D. Thesis Committees:**

(a) Ian Laudden, 2022 (U. of I. at Urbana-Champaign, Advisor: Sheldon Jacobson).

(b) Setareh Taki, 2021 (U. of I. at Urbana-Champaign, Advisor: Jugal Garg).

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

(d) Haiming Jin, 2017 (U. of I. at Urbana-Champaign, Advisor: Klara Nahrstedt).

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

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

(g) Eric Chastain, 2016 (Rutgers U., Advisor: Eric Allender).

Student Research Advising

- Postdoc: Bhaskar Ray Chaudhury (*Future Faculty Fellow*) 2021 - present
- PhD students
  - Shant Boodaghians (Now at VIRTU Financial Inc.) 2016 - 2021
  - Rucha Kulkarni (Cleared the preliminary exam. To defend in early-2023) 2017 - present
  - Vasileios Livanos 2018 - present
  - Aniket Murhekar 2020 - present
- Masters students
  - Aniket Murhekar (*Siebel Scholar Award 2020*) 2019 - 2020
  - Spencer Gordon (*Siebel Scholar Award 2017*) 2016 - 2017
- Undergraduate students
  - Shreya Patil Spring 2021
  - Shivam Gupta 2017 - 2018

Teaching

- Introduction to Algorithms & Models of Computation ($\sim$ 400 students), Spring 2022, Spring 2020. An undergrad course, CS 374 at the University of Illinois at Urbana-Champaign.
- Algorithms ($\sim$ 70 students), Spring 2021, Spring 2018, Fall 2016. An undergrad++ course, CS 473 at the University of Illinois at Urbana-Champaign.
- Recent Advances in Theoretical CS: Spring 2023. A graduate course, CS 598TH1, that I plan to design and teach at the University of Illinois at Urbana-Champaign.
- Topics on Algorithmic Game Theory, Fall 2022, Fall 2021, Fall 2020, Fall 2019, Fall 2018, Spring 2017, Spring 2016. Graduate courses, CS 598rm and CS 580 at the University of Illinois at Urbana-Champaign. (**Listed in the Instructors rated as Excellent by students, 2021 and 2017**).
- Advanced Topics in Algorithmic Game Theory, Spring 2013. A graduate course, CS 8803 at the Georgia Institute of Technology.

Selected Invited Talks

Workshop in the honor of Mihalis Yannakakis' 70th Birthday, Columbia Univerisity. Aug 2023

Mini-Symposium on Algorithmic Game Theory at CanaDAM, Winnipeg. June 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 (ICALP), Paris, France. July 2022

Algorithms, Dynamics, and Information Flow in Networks Seminar, Germany (virtual). June 2022

Cornell University, Theory Seminar (virtual). May 2022

C3.AI Digital Transformation Institute Colloquium on Digital Transformation (virtual). April 2022
Title: Allocating Goods, Bads, Mixed: Fairness and Efficiency through Competition

MIT, Algorithms and Complexity Seminar (virtual). April 2022
Title: Allocating Goods, Bads, Mixed: Fairness and Efficiency through Competition

University of Washington, Theory Seminar (virutal). April 2022
Title: Allocating Goods, Bads, Mixed: Fairness and Efficiency through Competition

Harvard University, EconCS Seminar (virtual). March 2022
Title: Algorithms to find Competitive Allocation of Goods, Bads, and Mixed

Israel AGT Seminar (virutal). March 2022
Title: Algorithms to find Competitive Allocation of Goods, Bads, and Mixed

Chennai Mathematical Institute, Scholastic Test of Excellence in Mathematical Sciences (STEMS) Lecture (virtual). Feb 2022
Title: Algorithms to find Competitive Allocation of Goods, Bads, and Mixed

Purdue University, CS Colloquium. Nov 2021
Title: Algorithms to find Competitive Allocation of Goods, Bads, and Mixed

CSL, U. of I. at Urbana-Champaign. Oct 2021
Title: Algorithms to find Competitive Allocation of Goods, Bads, and Mixed

Columbia University, Theory seminar (virtual). Oct 2021
Title: Algorithms to find Competitive Allocation of Goods, Bads, and Mixed

ISE seminar, University of Illinois at Urbana-Champaign (UIUC). Oct 2021
Title: Algorithms to find Competitive Allocation of Goods, Bads, and Mixed

FaiRACAC workshop, co-located with EC. June 2021
Title: On the Computability of Competitive Allocation for Mixed Manna

Keynote talk at the 13th Symposium on Algorithmic Game Theory (SAGT). Sept 2020
Title:Computability of Equilibria in Two-Player Games

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

RAIN Seminar, Stanford University. Oct 2020
Title: Nash Social Welfare Approximation for Strategic Agents

Complexity of Algorithmic Game Theory workshop. Dec 2019
Title:Computability of Equilibria in Two-Player Games

TTI-Chicago, Institute Colloquium. Oct 2019
Title:Computability of Equilibria in Two-Player Games

Simons Institute, UC Berkeley, Algorithms and Uncertainty Reunion Workshop. Dec 2018
Title: Social Welfare and Profit Maximization from Revealed Preferences

Algorithms and Randomness Workshop, Georgia Tech. May 2018
Title: Sum-of-Squares Meets Nash: Lower Bounds for Finding Any Equilibrium

COST Workshop on Algorithmic Game Theory, Rome, Italy. Mar 2018
Title: Combinatorial Markets with Covering Constraints: Algorithms and Applications

Algorithms and Optimization Workshop, ICTS Bangalore. Jan 2018
Title: Combinatorial Markets with Covering Constraints: Algorithms and Applications

Simons Institute, UC Berkeley, Economics and Computation Reunion Workshop. Apr 2017
Title: Nash Social Welfare Approximation for Strategic Agents

67th Midwest Theory Day, Indiana University Bloomington. Mar 2017
Title: Nash Social Welfare Approximation for Strategic Agents

Bellairs Workshop on Algorithmic Game Theory, Barbados. Apr 2016
Title: A Market for Scheduling, and a Polynomial time Algorithm for Computing Equilibria

Duke University, Econ-CS Seminar. Mar 2016
Title: A Market for Scheduling, and a Polynomial time Algorithm for Computing Equilibria

Keynote talk at the Game Theory Workshop at HIM, Universitat Bonn. Dec 2015
Title: A Market for Scheduling, and a Polynomial time Algorithm for Computing Equilibria

International Symposium on Mathematical Programming, Pittsburgh. Jul 2015
Title: (Essentially) Resolving the Complexity of Constant Rank Bimatrix

Mathematics of Information Seminar, California Institute of Tech. Jan 2015
Title: Leontief Markets Can Solve Multivariate Polynomials, Yielding FIXP and ETR Hardness

TTI-Chicago, Institute Colloquium. Oct 2014
Title: Leontief Markets Can Solve Multivariate Polynomials, Yielding FIXP and ETR Hardness

ACO Student Seminar at Georgia Tech, Atlanta. Nov 2014
Title: Leontief Markets Can Solve Multivariate Polynomial, Yielding FIXP and ETR Hardness

Theory Seminar, University of Chicago. Oct 2014
Title: (Essentially) Resolving the Complexity of Constant Rank Bimatrix

Dagstuhl Seminar on Equilibrium Computation, Germany. Aug 2014
Title: (Essentially) Resolving the Complexity of Constant Rank Bimatrix

Keynote talk at the Bellairs Workshop on Algorithmic Game Theory, Barbados. Apr 2014
Title: (Essentially) Resolving the Complexity of Constant Rank Bimatrix

Algorithms and Complexity Seminar, MIT. Nov 2013

Title: (Essentially) Resolving the Complexity of Constant Rank Bimatrix

London School of Economics (LSE), ESRC workshop on Algorithmic Game Theory.
Title: (Essentially) Resolving the Complexity of Constant Rank Bimatrix Oct 2013

Workshop on Computational Game Theory, Stony Brook. July 2013
Title: Rank-1 Bimatrix Games: A Homeomorphism and a Polynomial Time Algorithm

Theory Seminar, UC Berkeley. Apr 2013
Title: Rank-1 Bimatrix Games: A Homeomorphism and a Polynomial Time Algorithm

Georgia Tech, ACO Colloquium. Apr 2013
Title: Rank-1 Bimatrix Games: A Homeomorphism and a Polynomial Time Algorithm

China Theory Week 2012, Aarhus University. Aug 2012
Title: Rank-1 Bimatrix Games: A Homeomorphism and a Polynomial Time Algorithm

Mysore Park Theory Workshop 2012, Mysore, India. Aug 2012
Title: Rank-1 Bimatrix Games: A Homeomorphism and a Polynomial Time Algorithm

IEOR Seminar, Indian Institute of Technology Bombay, India. Feb 2011
Title: Rank-1 Bimatrix Games: A Homeomorphism and a Polynomial Time Algorithm