

Bhaskar Ray Chaudhury

Curriculum Vitae

Assistant Professor
Dept. of ISE & Siebel School of Computing (Affiliate)
University of Illinois Urbana-Champaign
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EMPLOYMENT

- 2023 – present **Assistant Professor**
Dept. of Industrial and Enterprise Systems Engineering; Dept. of Computer Science (Affiliate)
University of Illinois at Urbana-Champaign, Champaign, Illinois
- 2021 – 2023 **Postdoctoral Researcher** (Future Faculty Fellow)
Department of Computer Science
University of Illinois at Urbana-Champaign, Champaign, Illinois
- 2017 – 2021 **Researcher, Algorithms and Complexity**
Max Planck Institute for Informatics, Saarbrücken, Germany

EDUCATION

- 2017 – 2021 **PhD (Summa Cum Laude) in Computer Science (Dr. rer. nat.)**
Max Planck Institute for Informatics & Saarland University, Saarbrücken, Germany
Supervisor: Kurt Mehlhorn · Committee: K. Mehlhorn, K. Bringmann, T. Roughgarden, H. Moulin
- 2015 – 2017 **Graduate School of Computer Science**
Saarland University, Saarbrücken, Germany
- 2011 – 2015 **Bachelor of Technology (B. Tech.), First Class with Distinction**
Dept. of CS & Engineering, National Institute of Technology, Trichy, Tamil Nadu

AWARDS & HONOURS

- 2025 **NSF CAREER Award**
Algorithmic Foundations, National Science Foundation
“New Frontiers of Fairness in Allocation and Exchange Problems”
- EC 2020 **Best Paper with a Student Lead Author Award**
21st ACM Conference on Economics and Computation
For *EFX Exists for Three Agents*
- EC 2020 **Exemplary Theory Paper Award**
21st ACM Conference on Economics and Computation
For *EFX Exists for Three Agents*
- ICML 2026 **Spotlight Presentation**
43rd International Conference on Machine Learning (~24,000 submissions)
For *Equilibrium Pricing in Oligopolistic Data Markets* **TOP 2.6%**
- NeurIPS 2022 **Spotlight Presentation**
36th Conference on Neural Information Processing Systems
For *Fairness in Federated Learning via Core-Stability*
- UIUC 2022 **List of Teachers Ranked Excellent by Students**
CS 598: Computational Social Choice, UIUC

JOURNAL PUBLICATIONS

EFX Exists for Three Agents

Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn
Journal of the ACM (JACM)

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)

Competitive Equilibrium for Chores: from Dual Eisenberg-Gale to a Fast, Greedy, LP-based Algorithm

Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta, Tianlong Nan
Mathematics of Operations Research (MOR), major revision

Improving EFX Guarantees through Rainbow Cycle Number

Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, Pranabendu Misra
Mathematics of Operations Research (MOR)

Maximizing Nash Social Welfare in 2-Value Instances: Delineating Tractability

H. Akrami, B. R. Chaudhury, M. Hoefer, K. Mehlhorn, M. Schmalhofer, G. Shahkarami, G. Varricchio, Q. Vermande, E. van Wijland
Mathematics of Operations Research (MOR)

Polynomial Time Algorithms to Find an Approximate Competitive Equilibrium for Chores

Shant Boodaghians, Bhaskar Ray Chaudhury, Ruta Mehta

Operations Research (OR)

Competitive Allocation of a Mixed Manna

Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta, Peter McGlaughlin

Mathematics of Operations Research (MOR)

A Little Charity Guarantees Almost Envy-Freeness

Bhaskar Ray Chaudhury, Telikepalli Kavitha, Kurt Mehlhorn, Alkmini Sgouritsa

SIAM Journal on Computing (SICOMP)

On Fair Division of Indivisible Items

Bhaskar Ray Chaudhury, Yun Kuen Cheung, Jugal Garg, Naveen Garg, Martin Hoefer, Kurt Mehlhorn

Journal of Artificial Intelligence Research (JAIR)

Polyline Simplification has Cubic Complexity

Karl Bringmann, Bhaskar Ray Chaudhury

Journal on Computational Geometry (JoCG)

CONFERENCE PUBLICATIONS

Competitive Equilibrium in Labor Economies through the Lens of Goods and Chores Fisher Markets

Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta, Tianlong Nan, Zongjun Yang

Proc. 27th ACM Conference on Economics and Computation (EC 2026)

Equilibrium Pricing in Oligopolistic Data Markets SPOTLIGHT

Bhaskar Ray Chaudhury, Jugal Garg, Eklavya Sharma, Jiaxin Song

Proc. 43rd International Conference on Machine Learning (ICML 2026)

Tâtonnement Dynamics for Fisher Markets with Chores

Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta, Tianlong Nan

Proc. 57th ACM Symposium on Theory of Computing (STOC 2026)

Data Pricing via Competitive Equilibrium

Bhaskar Ray Chaudhury, Jugal Garg, Aniket Murhekar, Jiaxin Song

Proceedings of the Web Conference (WWW 2026)

Fair Revenue Compensation in Data Markets

Nathan Joe Joseph, Jiaxin Song, Bhaskar Ray Chaudhury

Proc. 25th Intl. Conf. on Autonomous Agents and Multiagent Systems (AAMAS 2026)

Spotlight at Workshop on Incentives for Collaborative Learning and Data Sharing, TTIC

On the Existence and Complexity of Core-Stable Data Exchanges

Jiaxin Song, Pooja Kulkarni, Parnian Shahkar, Bhaskar Ray Chaudhury

Proc. 39th Neural Information Processing Systems (NeurIPS 2025)

On the Theoretical Foundations of Data Exchange Economies

Hannaneh Akrami, Bhaskar Ray Chaudhury, Jugal Garg, Aniket Murhekar

Proc. 26th ACM Conference on Economics and Computation (EC 2025)

You Get What You Give: Reciprocally Fair Federated Learning

Aniket Murhekar, Jiaxin Song, Parnian Shahkar, Bhaskar Ray Chaudhury, Ruta Mehta

Proc. 42nd International Conference on Machine Learning (ICML 2025)

Competitive Equilibrium for Chores: from Dual Eisenberg-Gale to a Fast, Greedy, LP-based Algorithm

Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta, Tianlong Nan

Proc. 25th ACM Conference on Economics and Computation (EC 2024)

Fair Federated Learning via the Proportional Veto Core

Bhaskar Ray Chaudhury, Aniket Murhekar, Zhuowen Yuan, Bo Li, Ruta Mehta, Ariel D. Procaccia

Proc. 41st International Conference on Machine Learning (ICML 2024)

Incentives in Federated Learning: Equilibria, Dynamics, and Mechanisms for Welfare Maximization

Aniket Murhekar, Zhuowen Yuan, Bhaskar Ray Chaudhury, Bo Li, Ruta Mehta

Proc. 37th Neural Information Processing Systems (NeurIPS 2023)

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

Proc. 26th ACM Conference on Economics and Computation (EC 2023)

Fair and Efficient Allocation of Indivisible Chores with Surplus

Hannaneh Akrami, Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta

Proc. 32nd International Joint Conference on Artificial Intelligence (IJCAI 2023)

Fairness in Federated Learning via Core-Stability SPOTLIGHT

Bhaskar Ray Chaudhury, Linyi Li, Mintong Kang, Bo Li, Ruta Mehta

Proc. 36th Neural Information Processing Systems (NeurIPS 2022)

Maximizing Nash Social Welfare in 2-Value Instances: Delineating Tractability

H. Akrami, B. R. Chaudhury, M. Hoefer, K. Mehlhorn, M. Schmalhofer, G. Shahkarami, G. Varricchio, Q. Vermande, E. van Wijland

Proc. 32nd AAAI Conference on Artificial Intelligence (AAAI 2022)

Competitive Equilibrium with Chores: Combinatorial Algorithm and Hardness

Bhaskar Ray Chaudhury, Jugal Garg, Peter McGlaughlin, Ruta Mehta

Proc. 23rd ACM Conference on Economics and Computation (EC 2022)

Polynomial Time Algorithms to Find an Approximate Competitive Equilibrium for Chores

Shant Boodaghians, Bhaskar Ray Chaudhury, Ruta Mehta

Proc. ACM-SIAM Symposium on Discrete Algorithms (SODA 2022)

On the Existence of Competitive Equilibria with Chores

Bhaskar Ray Chaudhury, Jugal Garg, Peter McGlaughlin, Ruta Mehta

Proc. 13th Innovations in Theoretical Computer Science (ITCS 2022)

Improving EFX Guarantees through Rainbow Cycle Number

Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, Pranabendu Misra

Proc. 22nd ACM Conference on Economics and Computation (EC 2021)

Competitive Allocation of a Mixed Manna

Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta, Peter McGlaughlin

Proc. ACM-SIAM Symposium on Discrete Algorithms (SODA 2021)

Fair and Efficient Allocations under Subadditive Valuations

Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta

Proc. 35th AAAI Conference on Artificial Intelligence (AAAI 2021)

EFX Exists for Three Agents BEST PAPER EXEMPLARY THEORY PAPER AWARD

Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn

Proc. 21st ACM Conference on Economics and Computation (EC 2020)

A Little Charity Guarantees Almost Envy-Freeness

Bhaskar Ray Chaudhury, Telikepalli Kavitha, Kurt Mehlhorn, Alkmini Sgouritsa

Proc. ACM-SIAM Symposium on Discrete Algorithms (SODA 2020)

Polyline Simplification has Cubic Complexity

Karl Bringmann, Bhaskar Ray Chaudhury

Proc. Symposium on Computational Geometry (SoCG 2019)

On Fair Division of Indivisible Items

Bhaskar Ray Chaudhury, Yun Kuen Cheung, Jugal Garg, Naveen Garg, Martin Hoefer, Kurt Mehlhorn

Proc. 38th Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2018)

Sketching, Streaming and Fine-Grained Complexity of (Weighted) LCS

Karl Bringmann, Bhaskar Ray Chaudhury

Proc. 38th Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2018)

Combinatorial Algorithms for General Linear Arrow-Debreu Markets

Bhaskar Ray Chaudhury, Kurt Mehlhorn

Proc. 38th Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2018)

INVITED TALKS

- 2025 **Towards a Theory of Equilibrium in Data Markets**
Value of Data Seminar, University of Chicago · Information in Games and Mechanisms, FSTTCS'25
- 2024 **On the Theoretical Foundations of Data Exchange Economies**
Theory CS Seminar, Columbia · Econ CS Seminar, Harvard · ACO Seminar, UC Irvine · IDEAL Plenary, Northwestern · Fair Division Workshop, NUS · CS Seminar, IIT Delhi · AMD Workshop, FSTTCS'24
- 2023 **Fairness and Computation**
ISE Seminar, UIUC · Theory CS Seminar, Purdue · Departmental Seminar, Aalto · Distinguished Lecture Series, MPI-INF

- 2022 **On the Existence of EFX Allocations**
Colloquium Talk, Oxford University
- 2021 **On the Existence of EFX Allocations**
Colloquium Talk, TIFR · Workshop on Fair Resource Allocation, EC 2021
- 2019 **Towards Efficient Almost Envy-Free Allocations**
Workshop on Complexity in Algorithmic Game Theory, FSTTCS 2019, IIT Bombay

SERVICE

- PC Member* ACM Conf. on Economics and Computation EC'25 (Senior PC), EC'24, EC'23
- ACM-SIAM Symposium on Discrete Algorithms SODA'24
- IEEE Foundations of Computer Science FOCS'23
- EATCS European Symposium on Algorithms ESA'23
- Conference on Web and Internet Economics WINE'24, WINE'22
- Workshop Org.* *Fair Division: Algorithms and Complexity*, 63rd Annual Symp. on Foundations of Computer Science (FOCS 2022)
- Session Chair* *Economics and Computation*, INFORMS Annual Meeting 2022, Indianapolis

TEACHING

- Lectures* **Collective Decision Making** (IE 598) Instructor, Fall 2024, Fall 2023
- Deterministic Models in Optimization** (IE 310) Instructor, Spring 2026, Spring 2025, Spring 2024
- Computational Social Choice** (CS 598) Instructor, Fall 2022
- Algorithms** (CS 473) Instructor, Spring 2023, Spring 2022, Fall 2021
- Seminars* **Reading Group in Algorithms** Organizer, Summer 2019 & 2020, MPI-INF
- Topics in Fair Division** Organizer, Winter 2019, MPI-INF