Bhaskar Ray Chaudhury

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Employment

2023–present **Assistant Professor**,
Department of Industrial and Enterprise Systems Engineering,
Department 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**,
Algortihms 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 and Saarland University, Saarbrücken, Germany,
Supervisors: Kurt Mehlhorn, Karl Bringmann,
Thesis Committee: Kurt Mehlhorn, Karl Bringmann, Tim Roughgarden, Herve Moulin.

2015–2017 **Graduate School of Computer Science**,
Saarland University, Saarbrücken, Germany.

2011–2015 **Bachelor in Technology (B. Tech.)**,
Department of Computer Science and Engineering,
National Institute of Technology, Trichy, Tamil Nadu.

Awards

NSF CAREER Award,
Algorithmic Foundations,
National Science Foundation.

Best Paper with a Student Lead Author Award,
21st ACM Conference on Economics and Computation (**EC**).

Exemplary Paper in the Theory Track Award,
21st ACM Conference on Economics and Computation (**EC**).

Spotlight Presentation,
Neural Information Processing Systems (**NeurIPS**).

Future Faculty Fellowship,
University of Illinois Urbana Champaign (**UIUC**).

On the List of Teachers Ranked as Excellent for Fall 2022,
University of Illinois Urbana Champaign (**UIUC**).

Publications

2024 **EFX Exists for Three Agents**,
Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn,
Journal of the ACM (**JACM**),
Preliminary version appeared at ACM Conference on Economics and Computation (**EC**).

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**),
Preliminary version appeared at ACM Conference on Economics and Computation (**EC**).

Improving EFX Guarantees through Rainbow Cycle Number,
Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, Prananbendu Misra,
Mathematics of Operations Research (**MOR**),
Preliminary version appeared at ACM Conference on Economics and Computation (**EC**).

Maximizing Nash Social Welfare in 2-Value Instances: Delineating Tractability,
Hannaneh Akrami, Bhaskar Ray Chaudhury, Martin Hoefer, Kurt Mehlhorn, Marco Schmalhofer, Golnoosh Shahkarami, Giovanna Varricchio, Quentin Vermande, Ernest van Wijland,
Mathematics of Operations Research (accepted) (**MOR**),
Preliminary version appeared at AAAI Conference on Artificial Intelligence (**AAAI**).

Polynomial Time Algorithms to Find an Approximate Competitive Equilibrium for Chores,
Shant Boodhagiannis, Bhaskar Ray Chaudhury, Ruta Mehta,
Operations Research (accepted) (**OR**),
Preliminary version appeared at ACM SIAM Symposium on Discrete Algorithms (**SODA**).

Competitive Equilibrium for Chores: from Dual Eisenberg-Gale to a Fast, Greedy, LP-based Algorithm,
Bhaskar Ray Chaudhury, Christian Kroer, Ruta Mehta, Tianlong Nan,
Proceedings of the 25th ACM Conference on Economics and Computation (**EC**).

Fair Federated Learning via the Proportional Veto Core,
Bhaskar Ray Chaudhury, Aniket Murhekar, Zhuowen Yuan, Bo Li, Ruta Mehta, Ariel D. Procaccia,
Proceedings of the 41st International Conference on Machine Learning (**ICML**).

2023 **Competitive Allocation of a Mixed Manna**,
Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta, Peter McGlaughlin,
Mathematics of Operations Research (**MOR**),
Preliminary version appeared at ACM SIAM Symposium on Discrete Algorithms (**SODA**).

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**) .

Incentives in Federated Learning: Equilibria, Dynamics, and Mechanisms for Welfare Maximization,
Aniket Murhekar, Zhuowen Yuan, Bhaskar Ray Chaudhury, Bo Li, Ruta Mehta,
Proceedings of the 37th Conference on Neural Information Processing Systems (**NeurIPS**).

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

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

On the Existence of Competitive Equilibria with Chores ,
Bhaskar Ray Chaudhury, Jugal Garg, Peter McGlaughlin, Ruta Mehta,
Proc. of the 13th Innovations in Theoretical Computer Science (**ITCS**).

2021 **A Little Charity Guarantees Almost Envy-Freeness**,
Bhaskar Ray Chaudhury, Telikepalli Kavitha, Kurt Mehlhorn, Alkmini Sgouritsa,
SIAM Journal on Computing (**SICOMP**),
Preliminary version appeared at ACM SIAM Symposium on Discrete Algorithms (**SODA**).

Fair and Efficient Allocations under Subadditive Valuations,
Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta,
Proc. of the 35th AAAI Conference on Artificial Intelligence (**AAAI**).

2020 **Polyline Simplification has Cubic Complexity**,
Karl Bringmann, Bhaskar Ray Chaudhury,
Journal on Computational Geometry (**JoCG**),
Preliminary version appeared at the Symposium on Computational Geometry (**SoCG**).

2018 **Sketching, Streaming and Fine-Grained Complexity of (Weighted) LCS**,
Karl Bringmann, Bhaskar Ray Chaudhury,
Proc. of the 38th Foundations of Software Technology and Theoretical Computer Science (**FSTTCS**).

Combinatorial Algorithms for General Linear Arrow-Debreu Markets,
Bhaskar Ray Chaudhury, Kurt Mehlhorn,
Proc. of the 38th Foundations of Software Technology and Theoretical Computer Science (**FSTTCS**).

──────── Invited Talks

2024 **On the Theoretical Foundations of Data Exchange Economies**,
Theory CS seminar, Columbia University,
Econ CS seminar, Harvard University,
ACO seminar, UC Irvine,
IDEAL Plenary Talk, Northwestern University,
Workshop on Fair Division and Social Choice, National University of Singapore,
CS seminar, IIT Delhi,
AMD Workshop, FSTTCS'24.

2023 **Fairness and Computation**,
ISE graduate seminar, UIUC,
Theory CS seminar, Purdue University,
Departmental Seminar, Aalto University,
Distinguished lecture series, MPI-INF.

2022 **On the Existence of EFX Allocations**,
Colloqium Talk, Oxford University.

2021 **On the Existence of EFX Allocations**,
Colloqium Talk, Tata Institute of Fundamental Research,
Workshop on Fair Resource Allocation: Concepts, Algorithms and Complexity, EC .

2019   **Towards Efficient Almost Envy-Free Allocations**,
Workshop on Complexity in Algorithmic Game Theory,
39th IARCS Annual Conference on Foundations of Software Technology and Theoretical
Computer Science (FSTTCS 2019), IIT Bombay.

Services

PC member   EC'25 (SPC), EC'24, EC'23, SODA'24, ESA'23, FOCS'23, WINE'24, WINE'22

Workshop (Organizer)   *Fair Division: Algorithms and Complexity*, 63rd Annual Symposium on Foundations on 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),
University of Illinois at Urbana Champaign (UIUC).

Deterministic Models in Optimization (IE 310),
Instructor (Spring 2025, Spring 2024),
University of Illinois at Urbana Champaign (UIUC).

Computational Social Choice (CS 598),
Instructor (Fall 2022),
University of Illinois at Urbana Champaign (UIUC).

Algorithms (CS 473),
Instructor (Spring 2023, Spring 2022, Fall 2021),
University of Illinois at Urbana Champaign (UIUC).

Seminars   **Reading Group in Algorithms**,
Organizer (Summer 2019, Summer 2020),
Max Planck Institute for Informatics (MPI-INF).

Topics in Fair Division,
Organizer (Winter 2019),
Max Planck Institute for Informatics (MPI-INF).