Bhaskar Ray Chaudhury

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Employment

2023–present   **Assistant Professor of Operations Research**,
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

2022   **Teachers Ranked Excellent by Their Students**,
*University of Illinois Urbana Champaign (**UIUC**)*.

Spotlight Presentation (top 3%**)**,
*36th Conference on Neural Information Processing Systems (**NeurIPS**)*.

2021–2023   **Future Faculty Fellowship**,
University of Illinois Urbana Champaign (**UIUC**).

2020   **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**).

2017-2021   **IMPRS Doctoral Scholarship**,
Max Planck Institute for Informatics (**MPI-INF**).

Journal Publications

2023   **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 (minor revision) (**OR**).

2022   **Polynomial Time Algorithms to Find an Approximate Competitive Equilibrium for Chores** ,
Shant Boodhagiannis, Bhaskar Ray Chaudhury, Ruta Mehta,
Operations Research (minor revision) (**OR**).

Improving EFX Guarantees through Rainbow Cycle Number,
Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, Prananbendu Misra,
Mathematics of Operations Research (**MOR**).

Competitive Allocation of a Mixed Manna,
Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta, Peter McGlaughlin,
Mathematics of Operartions Research (**MOR**).

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**) .

2021   **A Little Charity Guarantees Almost Envy-Freeness**,
Bhaskar Ray Chaudhury, Telikepalli Kavitha, Kurt Mehlhorn, Alkmini Sgouritsa,
SIAM Journal on Computing (**SICOMP**).

2020   **Polyline Simplification has Cubic Complexity**,
Karl Bringmann, Bhaskar Ray Chaudhury,
Journal on Computational Geometry (**JoCG**).

Conference Publications

2023   **Incentives in Federated Learning: Equilibria, Dynamics, and Mechanisms for Welfare Maximization**,
Aniket Murhekar, Zhuowen Yuan, Bhaskar Ray Chaudhury, Bo Li, Ruta Mehta,
Proc. of the 36th 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**).

EFX Allocations: Simplifications and Improvements,
Hannaneh Akrami, Noga Alon, Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta,
Proc. of the 24th ACM Conference on Economics and Computation (**EC**).

2022   **Fairness in Federated Learning via Core-Stability** ,
Bhaskar Ray Chaudhury, Linyi Li, Mintong Kang, Bo Li, Ruta Mehta,
Proc. of the 36th Conference on Neural Information Processing Systems (**NeurIPS, Spotlight**).

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**).

Maximizing Nash Social Welfare in 2-Value Instances ,
Hannaneh Akrami, Bhaskar Ray Chaudhury, Martin Hoefer, Kurt Mehlhorn, Marco Schmalhofer, Golnoosh Shahkarami, Giovanna Varricchio, Quentin Vermande, Ernest van Wijland,
Proc. of the 36th AAAI Conference on Artificial Intelligence (**AAAI**).

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**).

Polynomial Time Algorithms to Find an Approximate Competitive Equilibrium for Chores
,
Shant Boodhagiannis, Bhaskar Ray Chaudhury, Ruta Mehta,
Proc. of the 33rd Symposium on Discrete Algorithms (**SODA**).

2021 **Improving EFX Guarantees through Rainbow Cycle Number**,
Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, Prananbendu Misra,
Proc. of the 22nd ACM Conference on Economics and Computation (**EC**).

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

Competitive Allocation of a Mixed Manna,
Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta, Peter McGlaughlin,
Proc. of the 32nd Symposium on Discrete Algorithms (**SODA**).

2020 **EFX Exists for Three Agents**,
Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn,
Proc. of the 21st ACM Conference on Economics and Computation (**EC**).

A Little Charity Guarantees Almost Envy-Freeness,
Bhaskar Ray Chaudhury, Telikepalli Kavitha, Kurt Mehlhorn, Alkmini Sgouritsa,
Proc. of the 31st Symposium on Discrete Algorithms (**SODA**).

2019 **Polyline Simplification has Cubic Complexity**,
Karl Bringmann, Bhaskar Ray Chaudhury,
Proc. of the the 35th 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**).

On Fair Division of Indivisible Items,
Bhaskar Ray Chaudhury, Yun Kuen Cheung, Jugal Garg, Naveen Garg, Martin Hoefer, Kurt Mehlhorn,
Proc. of the 38th Foundations of Software Technology and Theoretical Computer Science (**FSTTCS**).

Service

PC member	ACM Conference on Economics and Computation (EC'24, EC'23)
	ACM SIAM Conference on Symposium on Discrete Algorithms (SODA'24)
	IEEE Annual Symposium on Foundations of Computer Science (FOCS'23)
	European Symposium on Algorithms (ESA'23)
	Conference on Web and Internet Economics (WINE'22)
Reviewer (Conferences)	SOSA'22, SODA'22, EC'22, ESA'21, EC'21, SODA'21, ICDCS'21, EC'20, SoCG'20, SOSA'20, ESA'20, WINE'20, IPEC'20, ICALP'19, STACS'19, ESA'19, FSTTCS'19, WINE'19, SAGT'19, SoCG'18.
Reviewer (Journals)	ACM Transactions on Algorithms, SIAM Journal on Discrete Mathematics, Artificial Intelligence, Mathematics of Operations Research
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

Invited Talks

2023 **On the Computation of Competitive Equilibrium with Chores**,
Chicago Junior Scientist Forum, Toyota Technology Institute of Chicago, Northwestern University.

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.

On the Existence of EFX Allocations,
Workshop on Fair Resource Allocation: Concepts, Algorithms and Complexity ,
22nd ACM Conference on Economics and Computation (EC 2021), Budapest, Hungary.

2021 **Discrete Fair Division**,
Colloqium Talk, University of Illinois at Urbana-Champaign,
Part of the Illinois Computer Science Speakers Series.

2020 **On the Existence of EFX Allocations**,
Colloqium Talk, University of Cologne.

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.

Teaching

Lectures	**Deterministic Models in Optimization (IE 310)**, Instructor (Spring 2024), University of Illinois at Urbana Champaign (UIUC).
	Collective Decision Making (IE 598), Instructor (Fall 2023), University of Illinois at Urbana Champaign (UIUC).

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

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

Algorithms and Data Structures,
Tutor (Winter 2016, Winter 2017),
Max Planck Institute for Informatics (MPI-INF).

Algorithmic Game Theory, Mechanism Design and Computational Economics,
Teaching Assistant (Winter 2017),
Max Planck Institute for Informatics (MPI-INF).

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).

———— References (Listed Alphabetically)

○ **Prof. Uriel Feige**,
Weizmann Institute, Uriel.Feige@weizmann.ac.il

○ **Prof. Jugal Garg**,
University of Illinois at Urbana Champaign, jugal@illinois.edu

○ **Prof. Kurt Mehlhorn**,
Max Planck Instute for Informatics, mehlhorn@mpi-inf.mpg.de

○ **Prof. Ruta Mehta**,
University of Illinois at Urbana Champaign, rutameht@illinois.edu

○ **Prof. Herve Moulin**,
University of Glasgow, Herve.Moulin@glasgow.ac.uk

○ **Prof. Ariel Procaccia**,
Harvard University, arielpro@seas.harvard.edu

○ **Prof. Tim Roughgarden**,
Columbia University, tim.roughgarden@gmail.com