

Bhaskar Ray Chaudhury

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Employment

- 2021–present **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 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).
- 2021–present **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).

Working Papers

- 2023 **EFX Allocations: Simplifications and Improvements**,
Hannaneh Akrami, Noga Alon, Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta.
- Fairer Federated Learning under Limited Heterogeneity** ,
Bhaskar Ray Chaudhury, Bo Li, Ruta Mehta, Aniket Murhekar, Ariel Procaccia, Zhuowen Yuan.
- A Computational Social Choice Approach to Fairness Aware Classification**,
Bhaskar Ray Chaudhury, Philip Wellnitz.

Journal Publications

- 2022 **Polynomial Time Algorithms to Find an Approximate Competitive Equilibrium for Chores**,
Shant Boodhagiannis, Bhaskar Ray Chaudhury, Ruta Mehta,
Operations Research (minor revision) (**OR**).
- EFX Exists for Three Agents,**
Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn,
Journal of the ACM (minor revision) (**JACM**).
- Improving EFX Guarantees through Rainbow Cycle Number,**
Bhaskar Ray Chaudhury, Jugal Garg, Kurt Mehlhorn, Ruta Mehta, Pranabendu Misra,
Mathematics of Operations Research (major revision) (**MOR**).
- Competitive Allocation of a Mixed Manna,**
Bhaskar Ray Chaudhury, Jugal Garg, Ruta Mehta, Peter McGlaughlin,
Mathematics of Operations 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

- 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, Pranabendu 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**).

Services

- PC member FOCS'23 (invited), EC'23 (invited), WINE'22 (served)
- 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**,
Colloquium Talk, Oxford University.
- 2021 **On the Existence of EFX Allocations**,
Colloquium 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**,
Colloquium Talk, University of Illinois at Urbana-Champaign,
Part of the Illinois Computer Science Speakers Series.
- 2020 **On the Existence of EFX Allocations**,
Colloquium 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 **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 Institute 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