Robin Bowers

they/them · robin.bowers@colorado.edu · robin-bowers.com

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Research interests: Theoretical computer science, algorithmic economics, mechanism design, information aggregation, Pandora's Box, matching, algorithmic fairness.

Education

University of Colorado Boulder — Boulder, CO
PhD Student, Computer Science — *2021 – present*
Advisors: Bo Waggoner and Rafael Frongillo

University of Colorado Boulder — Boulder, CO
Master of Science, Computer Science — *2021 – 2024*
Advisors: Bo Waggoner and Rafael Frongillo

Oberlin College — Oberlin, OH
Bachelor of Arts, Computer Science and Mathematics — *2016 – 2020*

University of Edinburgh — Edinburgh, UK
IFSA-Butler Study Abroad — *Spring 2019*

Working Papers

Prophet Inequalities for Bandits, Cabinets, and DAGs.
Robin Bowers, Elias Lindgren, Bo Waggoner.

Publications

Authors listed alphabetically unless marked with *.

Polynomial-Time Approximation Schemes via Utility Alignment: Unit-demand Pricing and More.
Robin Bowers, Marius Garbea, Emmanouil Pountourakis, Samuel Taggart, *Symposium on Foundations of Computer Science (FOCS), 2025 (forthcoming).*

Matching with Nested and Bundled Pandora Boxes.
Robin Bowers, Bo Waggoner, *Conference on Web and Internet Economics (WINE), 2024.*

High-Welfare Matching Markets via Descending Price.
Robin Bowers, Bo Waggoner, *Conference on Web and Internet Economics (WINE), 2023.*

Loom Pedals: Retooling Jacquard Weaving for Improvisational Design Workflows.*
Shanel Wu, Xavier A Corr, Xi Gao, Sasha De Koninck, Robin Bowers, Laura Devendorf, *Conference on Tangible and Embedded Interaction (TEI), 2024.*

Machine Learning Based MIMO Equalizer for High Frequency (HF) Communications.*
S. Spillane, K. H. Jung, Bowers, T. Peken, M. H. Marefat and T. Bose, *2020 International Joint Conference on Neural Networks (IJCNN 2020).*

Professional Activities & Service

Teaching Assistant – Winter School on Data Economics — January 2025
Moroccan Center for Game Theory, UM6P — *Rabat, Morocco*

- Wrote problem set on value of information and data economics in machine learning
- Lead afternoon workshop session

Co-Organizer – EC Gender Inclusion Workshop — Summer 2024, 2025
Workshop at Conference on Economics and Computation (EC'24, '25) — *New Haven, CT; Stanford, CA*

- Co-organized 2025 workshop on gender inclusion with Natalie Collina, Mirah Shi, and Kunhe Yang
- Co-organized 2024 workshop on gender inclusion with Yeganeh Alimohammadi, Natalie Collina, Kate Donahue, Bailey Flanigan, and Maneesha Papireddygari

Founder/Coordinator – CU Boulder Algorithmic Fairness Reading Group — Fall 2023 – Fall 2024
University of Colorado Boulder — *Boulder, CO*

- Wrote a syllabus of papers for each semester, coordinated discussions of papers

Participant – SLMath Summer School Summer 2023
SLMath *Berkeley, CA*

- Participant in the summer school Mathematics and Computer Science of Market and Mechanism Design

Coordinator – Algorithmic Economics Reading Group 2022 – 2023
University of Colorado Boulder *Boulder, CO*

- Planned and scheduled reading group meetings

CU Boulder Graduate Peer Mentor 2022 – present
University of Colorado Boulder *Boulder, CO*

- Matched with incoming PhD and Master's students through both Graduate School and Computer Science Department mentorship programs
- Helped introduce students to research and the CU Boulder course system
- Helped international students adjust to Boulder

CU Boulder Graduate Prospective Student Mentor Fall 2022, 2023, 2024
University of Colorado Boulder *Boulder, CO*

- Matched to prospective students applying to graduate schools
- Provided feedback on application materials and guidance on CU Boulder's graduate program application process and expectations

Reviewing

EAAMO'25, EC'25, FAccT'25, EAAMO'24

Awards

Outstanding Service Award 2024
University of Colorado Boulder, Computer Science Department *Boulder, CO*

Outstanding Teaching Assistant Award 2022
University of Colorado Boulder, Computer Science Department *Boulder, CO*

Department Research Expo – Work In Progress Award 2022
University of Colorado Boulder, Computer Science Department *Boulder, CO*

R.J. Thomas Computer Science Teaching Assistant Award May 2020
Oberlin College *Oberlin, OH*

John F. Oberlin Scholarship 2016 – 2020
Oberlin College *Oberlin, OH*

Teaching

Guest Lecture – Discrete Math Fall 2024
CU Boulder *Boulder, CO*
Professor Bo Waggoner

Two Guest Lectures – Graduate Algorithms Fall 2024
CU Boulder *Boulder, CO*
Professor Sriram Sankaranarayanan

Teaching Assistant – Graduate Algorithms Fall 2024
University of Colorado Boulder *Boulder, CO*

- Contributed to writing homework solutions and grading, held weekly office hours.

Teaching Assistant – Principles of Programming Languages Fall 2023
University of Colorado Boulder *Boulder, CO*

- Led weekly practice sessions on functional programming and programming language construction

Teaching Assistant – Algorithms Spring 2022
University of Colorado Boulder *Boulder, CO*

- Led weekly practice sessions on course topics
- Wrote weekly problem sets and solutions presented in all TA sections
- Received a departmental teaching assistant award for my contributions

Teaching Assistant – Algorithms 2019 – 2020
Oberlin College *Oberlin, OH*

- Wrote worksheets for and led weekly practice sessions on course topics
- Transferred problem session material online for distance learning
- Received a departmental teaching assistant award for my contributions

Grader – Discrete Math Fall 2018, Spring 2020
Oberlin College *Oberlin, OH*

- Graded homework and quizzes weekly for class size of 30-80 students for in-person and distance learning classes
- Provided written feedback to students on mathematical reasoning and clarity

Invited Talks

Prophet Inequalities for Bandits, Cabinets, and DAGs.

- Boston College Theory Seminar (July 2025)
- UT Austin Theory Seminar (June 2025)

Posters & Talks

Matching with Nested and Bundled Pandora Boxes

Robin Bowers, Bo Waggoner, Poster presented at ACM Conference on Economics and Computation (EC), 2024; Talk presented at WINE 2024.

High-Welfare Matching Markets via Descending Price

Robin Bowers, Bo Waggoner, Poster presented at Marketplace Innovation Workshop, 2023; Simons Institute Workshop on Societal Considerations and Applications, 2022; ACM Conference on Economics and Computation, 2022. Talk presented at WINE 2023.

Other Experience

Undergraduate Research Assistant 2019 – 2020
Oberlin College *Oberlin, OH*

- Conducted research in economic game theory
- Proved setting-specifc performance lower-bounds for several auction algorithms
- Obtained complexity results on computing lower bounds for performance of auctions in specific settings

Research Internship – NSF REU Summer 2019
University of Arizona Department of Electrical and Computer Engineering *Tucson, AZ*

- Conducted study on "Machine Learning Based MIMO Equalizer for High Frequency (HF) Communications"
- Created mathematical models of long-range radio systems in MATLAB
- Implemented machine-learning algorithms to dynamically adjust system behavior for best performance
- Communicated professionally with other students to coordinate project and goals

Software Internship Summer 2018
Blendid *Sunnyvale, CA*

- Worked with Universal Robots robotic arm designing and optimizing movement paths in automated food kiosk
- Handled emergency kiosk malfunctions and daily prototype operations