

Hadley Black

Postdoctoral Researcher in Computer Science

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EnCORE Institute

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Education

- 2023 PhD in Computer Science, *UCLA*
Adviser: Raghu Meka
- *Thesis:* Testing and Learning in High-Dimensions: Monotonicity Testing, Directed Isoperimetry, and Convex Sets
- 2018 MS in Computer Science, *UC Santa Cruz*
Adviser: C. Seshadhri.
- 2016 BA in Computer Science, *UC Santa Cruz*
- 2016 BA in Pure Mathematics, *UC Santa Cruz*
- Graduated with highest honors in both majors
 - GPA: 3.91 - *Magna Cum Laude*

Publications

- 2025 Hadley Black, Arya Mazumdar, Barna Saha, Yinzhan Xu
Optimal Graph Reconstruction by Counting Connected Components in Induced Subgraphs.
In *Conference on Learning Theory (COLT)*, 2025.
- 2024 Hadley Black, Arya Mazumdar, Barna Saha
Learning Partitions with Optimal Query and Round Complexities.
In *Conference on Learning Theory (COLT)*, 2025.
- 2024 Hadley Black, Euiwoong Lee, Arya Mazumdar, Barna Saha
Clustering with Non-adaptive Subset Queries.
In *Neural Information Processing Systems (NeurIPS)*, 2024.
- 2023 Hadley Black.
Nearly Optimal Bounds for Sample-Based Testing and Learning of k -Monotone Functions.
In *International Conference on Randomization and Computation (RANDOM)*, 2024.

- 2023 Hadley Black, Eric Blais, Nathaniel Harms.
Testing and Learning Convex Sets in the Ternary Hypercube.
In *Innovations in Theoretical Computer Science (ITCS)*, 2024.
- 2023 Hadley Black, Deeparnab Chakrabarty, C. Seshadhri.
A $d^{1/2+o(1)}$ Monotonicity Tester for Boolean Functions on d -Dimensional Hypergrids.
In *SIAM Journal on Computing (SICOMP)*, 2025.
In *Foundations of Computer Science (FOCS)*, 2023. Invited to **SICOMP** Special Issue.
- 2022 Hadley Black, Deeparnab Chakrabarty, C. Seshadhri.
Directed Isoperimetric Theorems for Boolean Functions on the Hypergrid and an $\tilde{O}(n\sqrt{d})$ Monotonicity Tester.
In *Symposium on Theory of Computing (STOC)*, 2023.
- 2020 Hadley Black, Iden Kalemaj, Sofya Raskhodnikova.
Isoperimetric Inequalities for Real-Valued Functions with Applications to Monotonicity Testing.
In *Random Structures and Algorithms (RSA)*, 2024.
In *International Colloquium on Automata, Languages, and Programming (ICALP)*, 2023.
- 2019 Hadley Black, Deeparnab Chakrabarty, C. Seshadhri.
Domain Reduction for Monotonicity Testing: A $o(d)$ Tester for Boolean Functions in d -Dimensions.
In *Symposium on Discrete Algorithms (SODA)*, 2020.
- 2018 Hadley Black, Deeparnab Chakrabarty, C. Seshadhri.
A $o(d) \cdot \text{polylog } n$ Monotonicity Tester for Boolean Functions over the Hypergrid $[n]^d$.
In *Symposium on Discrete Algorithms (SODA)*, 2018.

Honors and Awards

- 2023 Student Travel Award, FOCS 2023.
- 2023 Student Travel Award, STOC 2023.
- 2020 SIAM Student Travel Award, SODA 2020.
- 2019-2020 Computer Science Department Fellowship Recipient, UCLA.
- 2018-2019 Samueli Fellowship Recipient, UCLA.
- 2018 SIAM Student Travel Award, SODA 2018.
- Spring 2017 Regent's Fellowship Recipient, UC Santa Cruz.
- 2016 Porter College Leadership and Community Service Award, UC Santa Cruz.
- 2013 - 2016 Dean's Honors, UC Santa Cruz - all terms attended.

Additional Research Experience

Summ 2021	Visiting Graduate Student, <i>University of Waterloo</i> , with Prof. Eric Blais
Summ 2020	Visiting Graduate Student, <i>Boston University</i> , with Prof. Sofya Raskhodnikova
Summ 2015	Guest Researcher at <i>DIMACS REU Program</i> , <i>Rutgers University</i> Selected participant in <i>DIMACS/DIMATIA Exchange Program</i>

Teaching

Spring 2023	Teaching Assistant - CS 260B, <i>Algorithmic Machine Learning</i> , UCLA
Fall 2022	Teaching Assistant - CS 181, <i>Introduction to Theoretical Computer Science</i> , UCLA
Winter 2022	Teaching Assistant - CS 181, <i>Introduction to Formal Languages and Automata Theory</i> , UCLA
Fall 2021	Teaching Assistant - CS 181, <i>Introduction to Theoretical Computer Science</i> , UCLA
Spring 2021	Teaching Assistant - CS 32, <i>Introduction to Computer Science II</i> , UCLA
Winter 2021	Teaching Assistant - CS 32, <i>Introduction to Computer Science II</i> , UCLA
Fall 2020	Teaching Assistant - CS 181, <i>Introduction to Theoretical Computer Science</i> , UCLA
Spring 2020	Teaching Assistant - CS 180, <i>Introduction to Algorithms and Complexity</i> , UCLA
Fall 2017	Teaching Assistant - CMPS 12B, <i>Introduction to Data Structures</i> , UC Santa Cruz
Fall 2015	MSI Learning Assistant - CMPS 101, <i>Algorithms and Abstract Data Types</i> , UC Santa Cruz
2014 - 2016	MSI Learning Assistant - CMPE 16, <i>Discrete Mathematics</i> , UC Santa Cruz
2014	Mathematics Tutor - <i>Calculus, Trigonometry, and Algebra</i> , Santa Rosa Junior College

Professional Service

Program committee member - ITCS 2025
Junior program committee member - COLT 2025
External journal reviewer - TOCT 2018, SIDMA 2018, TCS 2024
External conference reviewer - SOSA 2020, SODA 2021, ICALP 2021, ICALP 2022, FOCS 2022, FOCS 2023, STOC 2024, FORC 2024, FOCS 2024, SODA 2025, STOC 2025