

Hadley Black

Postdoctoral Researcher in Computer Science
University of California, San Diego
EnCORE Institute
Office: Atkinson 4310
Adviser: Barna Saha

email: hablack@ucsd.edu
homepage: hablack.github.io

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

- 2024 Hadley Black, Arya Mazumdar, Barna Saha
Learning Partitions with Simple Queries: Minimizing Complexity, Adaptivity, and Size.
Preprint.
- 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 *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 $o(d)$ -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, *University of Waterloo*, with Prof. Eric Blais
Summ 2020 Visiting Graduate Student, *Boston University*, with Prof. Sofya Raskhodnikova
Summ 2015 Guest Researcher at *DIMACS REU Program, Rutgers University*
Selected participant in *DIMACS/DIMATIA Exchange Program*

Teaching

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

Professional Service

- Program committee member - ITCS 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