Gabe Schoenbach

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PhD Student
Department of Computer Science
University of Chicago

email: gschoenbach@uchicago.edu
web: https://gabey.zip
phone: 707-779-131

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1 Education

- PhD, Computer Science, University of Chicago 2022–Present
  Advisor: Aloni Cohen.
- MS, Computer Science, University of Chicago 2025
  Committee: Aloni Cohen, David Cash, William Hoza.
- BA, Mathematics, University of Chicago 2020

Research Interests

- Cryptography: Searchable encryption, watermarks for language models, proofs of space.
- Theoretical Computer Science: Algorithms for sampling trees and graph partitions, Markov chains for computational redistricting, fine-grained complexity theory, coding theory.

Awards and Fellowships

- Summer Fellow, Voting Rights Data Institute at Tufts University 2019
- UChicago Dean's List, Odyssey Scholar, and University Scholar Award 2016–2020
- National Merit Scholar 2016

Research Experience

- *Graduate Research Assistant*, University of Chicago 2022–Present
  Advised by Aloni Cohen
- *Research Fellow*, Tufts University 2020-2022
  MGGG Redistricting Lab, hosted by Moon Duchin

Publications

[1] Karin C Knudson, Gabe Schoenbach, and Amariah Becker. Pyei: a python package for ecological inference. *Journal of Open Source Software*, 6(64):3397, 2021.

[2] Moon Duchin and Gabe Schoenbach. Redistricting for proportionality. In *The Forum*, volume 20, pages 371–393. De Gruyter, 2023.

[3] Daryl DeFord, Natasha Dhamankar, Moon Duchin, Varun Gupta, Mackenzie McPike, Gabe Schoenbach, and Ki Wan Sim. Implementing partisan symmetry: Problems and paradoxes. *Political Analysis*, 31(3):305–324, 2023.

[4] Daryl DeFord, Natasha Dhamankar, Moon Duchin, Varun Gupta, Mackenzie McPike, Gabe Schoenbach, and Ki Wan Sim. Implementing partisan symmetry: A response to a response. *Political Analysis*, 31(3):332–334, 2023.

[5] Aloni Cohen, Alexander Hoover, and Gabe Schoenbach. Watermarking Language Models for Many Adaptive Users. *2025 IEEE Symposium on Security and Privacy (SP)*, pp. 84-84, 2025.

Talks

- **Watermarking Language Models for Many Adaptive Users** 2025
  Berkeley Security Seminar
- **Range-Searchable Symmetric Encryption with Minimal Communication Complexity** 2025
  UChicago Masters' Presentation
- **Combinatorial Properties of Traceable Codes** 2023
  UChicago Theory Lunch Seminar
- **County-Aware Redistricting** 2023
  UChicago Theory Lunch Seminar
- **A Workflow for Testing EI** 2021
  MGGG Lab Seminar
- **Counting Graph Partitions** 2021
  MGGG Graph Algorithms Seminar
- **EI Considerations** 2020
  MGGG Lab Seminar
- **Exploring Partisan Symmetry** 2020
  UChicago Undergraduate Math Club

Professional Service

- **Subreviewer**
  - CRYPTO 2025
  - Foundations of Responsible Computing (FORC) 2023-2024
  - Computer and Communications Security (CCS) 2023
- **Conference/Workshop Volunteer**
  - Theory and Practice of Differential Privacy (TPDP) 2023
  - ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT) 2023
- **UChicago CS Theory Lunch Seminar** January 2024–March 2025
- **Teaching Assistant**
  - Advanced Algorithms (MPCS 55005) Spring 2025
  - Discrete Mathematics (CMSC 27100) Winter 2025
  - Introduction to Cryptography (CMSC 28400) Autumn 2024