Alistair Pattison

apattison@g.harvard.edu / *alipatti.com*

Education

Carleton College, B.A. in Mathematics and Statistics (summa cum laude) *September 2020 – June 2024*

- **GPA**: 3.99 / 4.0.
- **Involvement**: varsity track and field (captain), Phi Beta Kappa (junior year).
- **Selected coursework**: analytic and algebraic number theory, representation theory, Galois theory, real analysis, combinatorics, topology, statistical inference, machine learning, time series analysis, micro and labor economics, algorithms, cryptography, natural language processing, quantum computing.
- **Theses**: *sport2vec: Modeling Basketball with Deep Learning* (statistics) and *The Class Group* (math).

Research Experience

Predoctoral Fellow, Opportunity Insights at Harvard University *July 2024 – July 2026*
with Raj Chetty and John Friedman

- Wrote a pipeline to process decades of Census, IRS tax, and SSA mortality data to produce granular estimates of life expectancy by geography, income, race, and sex.
- Conducted analyses to disentangle mechanisms behind the diverging health of the rich and the poor.
- Coauthoring a paper on the changing relationship between race, income, and life expectancy in the United States.

Cryptography Research Assistant, University of Minnesota *September 2022 – June 2024*
with Nicholas Hopper

- Designed a tool for reporting misuse on encrypted messaging platforms that provably maintains users' privacy.
- Utilized threshold cryptography and a non-interactive zero-knowledge proof to have senders of reported messages retain their privacy until their messages are reported many times or by many people.
- Presented findings at 44th IEEE Symposium on Security and Privacy.

Algorithms Research Assistant, Carleton College *September 2023 – June 2024*
with David Liben-Nowell and Anna Rafferty

- Proposed and studied a novel NP-complete combinatorial problem inspired by clustering survey responses.
- Proved inapproximability of the problem in general and exhibited a greedy 0.5-approximation on a restricted case.

Computational Research Assistant, LIGO Scientific Collaboration *January 2024 – March 2024*
with Jay Tasson

- Served as a computational RA on a project searching for gravitational waves emitted by spinning neutron stars.
- Maintained a database and interactive dashboard to help locate false positives in the collaboration's sensor data.

Statistical Consultant, Minnesota Department of Human Services *September 2023 – November 2023*
with Adam Loy

- Used American Community Survey data to identify target populations for housing and internet access programs.

Refereed Publications

Alistair Pattison and Nicholas Hopper. *Committee Moderation on Encrypted Messaging Platforms*. Extended abstract at the *44th IEEE Symposium on Security and Privacy*. May 2023. arXiv: `2306.01241`.

Preprints and Working Papers

Sophie Boileau, Andrew Hong, David Liben-Nowell, **Alistair Pattison**, Anna N. Rafferty, and Charlie Roslansky. *Maximizing the Margin Between Desirable and Undesirable Elements in a Covering Problem*. Under review. Oct. 2025. arXiv: 2507.03817.

Alistair Pattison. *Public Ideological Polarization*. Nov. 2025. arXiv: 2512.00955.

Works in Progress

Raj Chetty, Janet Currie, John N. Friedman, Ines Guix, Nathan Hendren, Hannes Schwandt, Michael Stepner, Harvey Barhard, Dhruv Gaur, Tyler Jacobsen, Emma Lee, **Alistair Pattison**, Ana Sanchez-Chico, Arjun Shanmugam, Brad Foster, and Sonya Porter. *Evolution of Racial and Socioeconomic Disparities in Life Expectancy in the United States, 2001-2019*.

Alistair Pattison and Nicholas Hopper. *Private Threshold Content Reporting for Encrypted Messages*.

Teaching

Computer Science Teaching Assistant, Carleton College

- CS 314: Data Visualization (spring 2023, spring 2024)
- CS 321: Making Decisions with Artificial Intelligence (winter 2024)
- CS 252: Algorithms (spring 2023)

Math Teaching Assistant, Carleton College

- MATH 342: Abstract Algebra I (winter 2024)
- MATH 321: Real Analysis I (fall 2023)
- MATH 120: Calculus II (winter 2022)
- MATH 236: Math Structures (spring 2021)

Select Honors

Noyes Prize, one of the six highest GPAs in graduating class	*May 2024*
Kelly Award, leadership in collegiate track & field	*May 2024*
MIAC Conference Champion, track and field (4x800m)	*May 2024*
MIAC All-Conference, track and field (800m, 4x400m, 4x800m)	*February 2023, 2024; May 2024*
NSF Research Experience for Undergraduates	*June 2023*
Dean's List	*September 2021, 2022, 2023*
Phi Beta Kappa, elected as Junior	*May 2023*
Kolenkow Reitz Fellowship	*September 2022*
National Merit Scholarship	*September 2020*

Other Experience

Wilderness Outfitter and Guide, YMCA Camp Widjiwagan	*June 2021 – August 2021*
Cafeteria Worker, Carleton College	*September 2020 – March 2021*
Farm Hand, Hansen Tree Farm	*November 2018 – December 2020*

Skills and Interests

Programming — Python, Rust, R, TypeScript, Swift, git, Docker, LaTeX, SQL.

Personal Interests — Mountains, perennially mediocre sports teams, playing the piano, biking, pickup soccer.