

# ALISTAIR PATTISON

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## Education

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**Bachelors of Arts, Mathematics & Statistics, Carleton College** (September 2020 – June 2024)

- 3.99 GPA, captain of varsity track and field.
- Studied abroad at the University of Cambridge taking classes in cryptography, WWII history, and the history of computing.
- Math coursework in algebra, analysis, combinatorics, and analytic number theory.
- Computer science coursework in algorithms, cryptography, artificial intelligence, and quantum computing.
- Statistics coursework in probability, regression, time-series analysis, data science, and data visualization.

## Work Experience

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**Research Assistant, University of Minnesota** (September 2022 – August 2023)

- Developed a method for reporting abuse on encrypted messaging platforms that provably maintains privacy until certain thresholds are met, e.g., if a user is reported enough times or by enough people.
- Wrote and benchmarked a proof-of-concept implementation in Rust.
- Presented findings at a peer-reviewed security conference and gave talks at weekly lab seminars.

**Teaching Assistant, Carleton College** (March 2021 – present)

- Tutor students, grade homework, and hold office hours for classes in the math and computer science departments.
- Classes include algorithms, real analysis, abstract algebra, data visualization, artificial intelligence, and calculus.

**The Food Guy, YMCA Camp Widjiwagan** (June – September 2021)

- Oversaw the purchase and distribution of food for nearly 200 wilderness trips across the US and Canada.
- Managed a \$95,000 budget alongside two other employees and taught basic nutrition to kids aged 12 to 18.
- Lead a week-long canoeing trip with BOLD, a program dedicated to making the outdoors more diverse and accessible.

**Dining Hall Worker, Carleton College** (September 2020 – March 2021)

## Publications

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Alistair Pattison and Nicholas Hopper. “Committee Moderation on Encrypted Messaging Platforms”. In: *44th IEEE Symposium on Security and Privacy*. Poster. May 2023. URL: <https://arxiv.org/abs/2306.01241>

## Awards

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Phi Beta Kappa, 2023

Dean’s List, 2023, 2022, 2021



James F. Koehler Scholarship, 2022

National Merit Scholarship, 2020

## Projects



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**Ole or Carl?**

 [alipatti/oleorcarl](https://github.com/alipatti/oleorcarl) 



- This project tests the validity of a long-standing stereotype that students from Northfield’s two colleges look meaningfully different. If so, then a machine learning model should be able to tell them apart? Right?
- Uses an SVM classifier on embeddings of student’s faces taken from directory photos.

## Carleton Course Classifier

 [alipatti/course-classifier](#) 



- A Tensorflow language model that predicts a course's department and number given its description.
- Achieves 64% accuracy in a 54-class problem using a neural net and the Stanford GloVe embeddings.

## Wordle Bot

 [alipatti/wordle-bot](#) 

- A NumPy implementation, of 3Blue1Brown's information-theoretic Wordle bot, with a few performance improvements.

## In Passing

 [alipatti/in-passing](#) 

- A visualization of passing and touch data from the 2022 FIFA Men's World Cup, built with d3.js.

## Skills

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**Programming:** Python, R, JavaScript, L<sup>A</sup>T<sub>E</sub>X, Rust, Java, SQL, git, Docker.

**Web Development:** React, Typescript, Next.js, Prisma.

**Data Science:** NumPy, dplyr, pandas, Matplotlib, ggplot2, tidyverse, SQL.

**Machine Learning:** TensorFlow, vector embeddings, SVMs, scikit-learn.

**Data Visualization:** ggplot2, matplotlib, d3.js.