

RYAN B. AMOS

Princeton, NJ

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EDUCATION

Princeton University

PhD in Computer Science (GPA: 3.83)

- Advisors: Edward Felten, Prateek Mittal
- Dissertation: Consumer Protection on the Web with Longitudinal Web Crawls and Analysis

09/2016 – 04/2022

Princeton, NJ, USA

Princeton University

MA in Computer Science (GPA: 3.75)

09/2016 – 06/2018

Princeton, NJ, USA

Dartmouth College

BA in Computer Science (GPA: 3.68)

- Francis L. Town Scientific Prize in Computer Science (12/2014)
- Graduated Cum Laude and with High Honors.

09/2012 – 06/2016

Hanover, NH, USA

SELECTED PROJECTS

Privacy Policies Over Time [↗](#) | Longitudinal web crawl and analysis of privacy policies

2019–2020

- Collaborated on a web crawler to collect privacy policies from Internet Archive.
- Analyzed around 1M privacy policies.
- Technologies used include: Python, Pyppeteer, Scikit-Learn, JupyterLab, Pandas, SQLite

Reviews in Motion [↗](#) | Longitudinal web crawl and analysis of online reviews

2020–2022

- Developed on a web crawler to collect reviews from Yelp.
- Maintained the web crawler for a year for longitudinal perspective.
- Analyzed around 12M reviews.
- Technologies used include: Python, Pyppeteer, Scikit-Learn, JupyterLab, Pandas, Statsmodels, AWS EC2, Flask

Shuffling the Cards [↗](#) | Information Theoretic Side Channel Defense

2018–2020

- Collaborated on an information theoretic defense against a large class of side channel attacks.
- The defense is mostly blackbox
- Developed a framework for characterizing side channel attacks.

Incentive Driven Randomness Beacons [↗](#) | Smart contracts for verifiable randomness

2017-2019

- Developed a cryptographic protocol for public randomness.
- The incentives are carefully balanced to avoid cheating.
- The system is managed using smart contracts.
- Technologies used include: Java, Solidity, Google Cloud Compute

COURSEWORK / SKILLS

Selected courses

- Security and Privacy
- Fundamentals of machine learning
- Artificial intelligence
- Advanced Computer Networks
- Computer architecture
- Quantum cryptography

Skills

- Cryptography
- Data science
- Java
- Information theory
- Python
- Solidity

RESEARCH EXPERIENCE

Princeton University

PhD Candidate

06/2018–04/2022

Princeton, NJ

- Advised by Ed Felten and Prateek Mittal.
- Completed “Reviews in Motion.”
- Completed “Privacy Policies Over Time.”
- Designed “Shuffling the Cards.”

Princeton University

PhD Student

09/2016–06/2018

Princeton, NJ

- Advised by Ed Felten.
- Designed “Incentive Driven Randomness Beacons.”

Dartmouth College

Research assistant

01/2016–06/2016

Hanover, NH

- Advised by Sean Smith.
- Worked on an experiment to study how people use passwords.

Dartmouth College

Research assistant

04/2015–08/2015

Hanover, NH

- Advised by Chris Bailey-Kellogg.
- Developed a computational system for the deletion of B-cell epitopes (immune response sites).

Dartmouth College

Research assistant

06/2011–08/2011, 06/2012–08/2012, 06/2013–08/2013

Hanover, NH

- Advised by Jason Moore.
- Created graphical interfaces for scientific software.
- Ported scientific software.
- Developed a genetic simulation for testing machine learning algorithms.

INTERNSHIP EXPERIENCE

Federal Trade Commission [↗](#)

Student Trainee

06/2020–08/2020

Remote

- Started “Reviews in Motion.”

LEADERSHIP

Teaching

Instructor/Teaching Assistant/Section Leader

Varies

Dartmouth College, Princeton University

- Information Security: Fall ‘17, Spring ‘21.
- Computer Networks: Fall ‘20.
- Algorithms for Computational Biology: Spring ‘18.
- Machine Shop Instructor: Fall ‘15, Winter ‘16.
- Introduction to Object Oriented Programming: Fall ‘13, Winter ‘14.
- Rock Climbing 101 (mini-course): Fall ‘21, Spring ‘22.
- Lead Climbing (mini-course): 02/2022.
- Introduction to Physical Security and Lockpicking (mini-course): 01/2021, 01/2022.

Security and Privacy Reading Group

Leader

2019–2022

Princeton University

- Rebuilt after it disbanded. Lead the group.
- Tasks involved finding and selecting papers, leading discussions, and appointing others as leaders for specific meetings.

Princeton University Blacksmiths [↗](#)

Founder and Leader

2017–2022

Princeton University

- Organized and ran events.
- Managed permits and other permissions.
- Selected equipment for purchase.

- Constructed and maintained equipment.
- Instructed students.
- Princeton Alumni Weekly article: “Student Dispatch: Grad Student Forges Blacksmithing Club” [↗](#)

New Jersey Blacksmiths Association [↗](#)

2016-2022

Director, Chairman, Websmith

NJ

- Website and social media maintenance.
- Organizing and running board meetings.
- Organizing events.

Phi Tau Coeducational Fraternity

Varies, 2013-2016

Web Secretary, Vice President, Social Chair, Treasurer

Dartmouth College

- Website maintenance.
- Managed interpersonal issues.
- Organized social events.
- Managed the budget and tracking expenditures.

Dartmouth EMS

2013-2016

Emergency Medical Technician

Dartmouth College

- Responded to medical emergencies and performed medical standby at events on Dartmouth College’s campus.

PUBLICATIONS

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- Ryan Amos, Roland Maio, Prateek Mittal. “Reviews in motion: a large scale, longitudinal study of review recommendations on Yelp.” Accepted to *Workshop on Technology and Consumer Protection 2022*.
 - Ryan Amos, Gunes Acar, Elena Lucherini, Mihir Kshirsagar, Arvind Narayanan, and Jonathan Mayer. “Privacy Policies over Time: Curation and Analysis of a Million-Document Dataset.” *In Proceedings of The Web Conference 2021*.
 - Salganik et al. “Measuring the predictability of life outcomes with a scientific mass collaboration.” *Proceedings of the National Academy of Sciences* 117.15 (2020): 8398-8403.
 - Ryan Amos, Marios Georgiou, Aggelos Kiayias, and Mark Zhandry. “One-shot Signatures and Applications to Hybrid Quantum/Classical Authentication.” *In Proceedings of the 52nd Annual ACM SIGACT Symposium on Theory of Computing (STOC 2020)*.
 - Jason H. Moore, Ryan Amos, Jeff Kiralis, and Peter C. Andrews. “Heuristic identification of biological architectures for simulating complex hierarchical genetic interactions.” *Genetic epidemiology* 39.1 (2015): 25-34.
 - Choi, Yoonjoo, Jacob M. Furlon, Ryan B. Amos, Karl E. Griswold, and Chris Bailey-Kellogg. “DisruPPI: structure-based computational redesign algorithm for protein binding disruption.” *Bioinformatics* 34.13 (2018): i245-i253.
 - Ryan B. Amos, Mihir Kshirsagar, Edward W. Felten, Arvind Narayanan. “Enhancing the Security of Data Breach Notifications and Settlement Notices.” *Freedom to Tinker*. November 8, 2019. Blog post and discussion paper.
 - Ryan Amos, Tithi Chattopadhyay, Edward W. Felten, Mihir Kshirsagar, Jonathan Mayer, Arvind Narayanan. Comment on FTC Safeguards Rule, 16 CFR part 314, Project No. P145407. Document ID FTC-2019-0019-0054 (2019).
 - Ryan Amos, Edward W. Felten. Incentive-Driven Verifiable Random Beacons. *Unpublished*. (2018).
 - Ryan Amos, Samuel Ginzberg, Sameer Waugh, Edward W. Felten, Michael Freedman, Prateek Mittal. Shuffling the Cards: An Information-Theoretic Defense Against Side Channel Attacks. *Unpublished*. (2019).

PERSONAL INTERESTS

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|-----------------|------------------------|-----------------|
| • Rock climbing | • Hiking & backpacking | • Blacksmithing |
| • Guitar | • Locksport | • Fermentation |