RYAN B. AMOS

EDUCATION

Princeton University *September 2016 - Present*
PhD Candidate in Computer Science
Master of Art in Computer Science (Awarded November, 17, 2018)
Dartmouth College *September 2012 - June 2016*
Bachelor of Arts in Computer Science Overall GPA: 3.68
Graduated Cum Laude with High Honors

PUBLICATIONS

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 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).*

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, 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.*

Ryan Amos, Roland Maio, Prateek Mittal. "Reviews in motion: a large scale, longitudinal study of review recommendations on Yelp." *In Submission.*

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 Safegards Rule, 16 CFR part 314, Project No. P145407. Document ID FTC-2019-0019-0054 (2019).

WORKS IN PROGRESS

Incentive-Driven Verifiable Random Beacons
We developed a novel random beacon construction, under the constraints of an economic security parameter, which describes the adversary's ability and willingness to bribe protocol participants. We show how our construction allows provable security against adversaries of arbitrary economic power.

Shuffling the Cards: An Information-Theoretic Defense Against Side-Channel Attacks
We are developing three defenses against a class of side-channel attacks involving simultaneous execution of the same algorithm with different inputs. We have proven information-theoretic bounds on the effectiveness of attacks against our defense for two of the defenses, and are working on proving the

effectiveness of the third defense.

TEACHING EXPERIENCE

Princeton University November 2021-December 2021
Instructor

Instructor for Rocks 101, an introduction to rock climbing course.

Princeton University Februrary 2021-May 2021
Teaching Assistant

Teaching Assistant for COS 432 – Information Security. Professor: Prateek Mittal

Princeton University September 2020-January 2021
Teaching Assistant

Teaching Assistant for COS 461 – Computer Networks. Professor: Kyle Jamieson

Princeton University February 2018-May 2018
Teaching Assistant

Teaching Assistant for COS 343 – Algorithms for Computational Biology. Gave the lecture on computational structural biology. Professor: Ben Raphael

Princeton University September 2017-January 2018
Teaching Assistant

Teaching Assistant for COS 432 – Information Security. Professor: Edward W. Felten, Jrmie Lumbroso

Dartmouth College September 2013-November 2013
Teaching Assistant

Teaching Assistant for COSC10 – Introduction to Objecture Oriented Programming. Professor: Chris Bailey-Kellogg.

Dartmouth College September 2015-March 2016
Teaching Assistant - Machine Shop

Taught students how to operate machine shop equipment and performed routine maintenance of machines.

Dartmouth College January 2014-March 2014
Teaching Assistant

Teaching Assistant for COSC10 – Introduction to Object Oriented Programming. Professor: Gevorg Grigoryan.

Dartmouth College September 2013-November 2013
Teaching Assistant

Teaching Assistant for COSC10 – Introduction to Objecture Oriented Programming. Professor: Chris Bailey-Kellogg.

WORK EXPERIENCE

Federal Trade Commission June 2020-August 2020
Student Trainee

Engaged in research with the Office of Technology Research and Investigation. The details of my research are currently non-public.

Princeton University Climbing Wall September 2019-Ongoing
Wall Staff

Responsibilities include basic staffing during open hours, teaching technical skills to new climbers, and developing new climbing routes. Certified Climbing Wall Instructor by the American Mountain Guiding Association.

Dartmouth College January 2016-July 2016
Research Assistant - Sean Smith

Developed an experiment to study user password usage patterns.

Dartmouth College March 2015-June 2015
Teaching Assistant

Teaching Assistant for COSC55 – Computer Architecture. Professor: Sean Smith.

Dartmouth College March 2015-September 2015
Research Assistant - Chris Bailey-Kellogg

Research in computational structural biology that lead to the Choi. *et al.* paper.

Dartmouth College June-September 2011,2012,2013
Research Assistant - Jason Moore

Research in computational genomics, primarily involving developing visualizations for data.

TALKS

"Privacy Policies over Time: Curation and Analysis of a Million-Document Dataset." at The Web Conference, 2021.

"Blacksmithing" at the National Chemistry Week Event for Marvelous Metals, a community event for local primary and secondary school students. October 25, 2019.

"Statics and regression" at Princeton AI4ALL. August 13, 2018

AWARDS

2014 Town Prize in Computer Science. Awarded to "one meritorious and deserving student in each department of scientific study at the College."

VOLUNTEERING AND NOTABLE EXTRACURRICULAR ACTIVITY

Co-taught "Physical Security and Lockpicking" during Princeton's Wintersession 2021.

Reformed and managed the security reading group at Princeton (2019-ongoing)

Mentor for the Summer Programming Experience at Princeton during 2018 and 2019. Advised two rising sophomores each year on developing practical programming skills.

Director (2016-Ongoing) and Chairman (2018-Ongoing) of the New Jersey Blacksmiths Association

Vice President (2015-2016), Treasurer (2015), and Web Secretary (2013-2016) of Phi Tau Coeducational Fraternity

EMT for Dartmouth EMS from 2012-2016. EMT and HCP CPR Certified at Dartmouth College
Founder of the Princeton University Blacksmiths club
Computer refurbishing for Comp-U-Dopt from 2010-2012