
Eleanor Birrell
Ph.D. Candidate
Department of Computer Science, Cornell University

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Education

- May 2018 (expected) ***Ph.D. Computer Science, Cornell University***
Thesis Title: Use-Based Privacy
Advisor: Fred Schneider
- May 2014 ***M.S. Computer Science, Cornell University***
Advisors: Fred Schneider, Rafael Pass
- June 2009 ***B.A. cum laude Computer Science and Mathematics, Harvard University***
Thesis Title: Composition of Zero-Knowledge Proofs
Advisor: Salil Vadhan

Awards and Honors

- 2017 ***Outstanding Teaching Award***
CS5431: Practicum in System Security
- 2010 ***NSF Graduate Research Fellowship***
- 2009 ***Strauss Hawkins Fellowship***

Research

System security and data privacy. My current work develops a new approach to data security in the modern world based on use-based authorizations. The focus is on understanding user privacy preferences, designing a reactive policy language for use-based authorizations, enforcing such authorizations in decentralized systems using Intel SGX, and extending our regime to support practical use-based privacy.

Publications

E. Birrell, A. Gjerdrum, H. Johansen, D. Johansen, R. van Renesse, and F. B. Schneider. SGX Enforcement of Use-based Authorizations. *In preparation*.

E. Birrell and F. B. Schneider. A Reactive Approach for Use-based Privacy. *In submission*.

H. Johansen, E. Birrell, R. van Renesse, F. B. Schneider, M. Stenhaug, and D. Johansen. Enforcing Privacy Policies with Meta-Code. In *Asia-Pacific Workshop on Systems (APSys)*, pages 16:1-16:7, 2015.

E. Birrell and F. B. Schneider. Federated Identity Management Systems: A Privacy-based Characterization. *IEEE Security & Privacy*, Vol. 11(5), pages 36-48, Sept/Oct 2013.

E. Birrell, K.-M. Chung, R. Pass, and S. Telang. Randomness-Dependent Message Security. In *Tenth IACR Theory of Cryptography Conference (TCC)*, pages 699-718, 2013.

E. Birrell and R. Pass. Approximately Strategy-Proof Voting. In *International Joint Conferences on Artificial Intelligence (IJCAI)*, pages 67-72, 2011.

E. Birrell and S. Vadhan. Composition of Zero-Knowledge Proofs with Efficient Provers. In *Seventh IACR Theory of Cryptography Conference (TCC)*, pages 572-587, 2010.

Teaching Experience

Spring 2018 ***Instructor, Department of Computer Science, Cornell University***
CS 5430: System Security

Fall 2017, Spring 2018 ***Instructor, Department of Computer Science, Cornell University***
CS 2110: Object-Oriented Programming and Data Structures (w/ David Gries)
CS 2111: Programming Practicum (w/ David Gries)

Spring 2017, Spring 2018 ***Instructor, Department of Computer Science, Cornell University***
CS 5431: Practicum in System Security

Spring 2013, Spring 2015 ***Teaching Assistant, Department of Computer Science, Cornell University***
CS 5430: System Security (Course Instructors: Fred Schneider, Michael Clarkson)

Fall 2011 ***Teaching Assistant, Department of Computer Science, Cornell University***
CS 6830: Cryptography (Course Instructor: Rafael Pass)

Spring 2009 ***Teaching Fellow, Department of Computer Science, Harvard University***
CS 105: Privacy and Technology
CS 124: Data Structures and Algorithms

Fall 2008 ***Teaching Fellow, Department of Computer Science, Harvard University***
CS 121: Introduction to Theoretical Computer Science

Spring 2008 ***Course Assistant, Department of Mathematics, Harvard University***
Math 21a: Multivariable Calculus

Fall 2007 ***Course Assistant, Department of Mathematics, Harvard University***
Math 1b: Calculus, Series, and Differential Equations

Spring 2007 ***Course Assistant, Department of Mathematics, Harvard University***
Math 1a: Introduction to Calculus

Fall 2006 ***Course Assistant, Department of Mathematics, Harvard University***
Math 21b: Linear Algebra and Differential Equations

Projects Supervised

Spring 2017

M.Eng. Project

Students: Jacqueline Law, Nishad Mathur, Ning Wang, Zhan Zhao
Title: *PostIt: A System for Secure Password Management*

Spring 2016

M.Eng. Project

Student: Andy Yi-Chun Huang
Title: *Used-based Security for Mobile Health Apps*

Outreach

2010 - 2018

Workshop Leader, Expanding Your Horizons

Expanding Your Horizons (EYH) is a one-day conference for junior high girls that introduces them to different STEM fields through a series of hands-on workshops. Over the last few years, I have designed and run workshops that introduce these girls to different areas of computer science including programming (with Scratch) and networking (with paper airplanes).

2017-2018

Graduate Student Fellow, GRASSHOPR

The Graduate Student School Outreach Program (GRASSHOPR) pairs graduate students with local teachers in Tompkins County. Over the last two years, I have developed an inter-disciplinary mini-course on privacy and technology that I teach to local high school students.

Invited Talks

November 2017

The Avenance Project

DataBox Symposium, London, England

September 2017

SGX Enforcement of Use-Based Privacy

ASRG Seminar, Cisco, Morrisville, NC

August 2017

SGX Enforcement of Use-Based Privacy

International Personal Data Systems Workshop, Sommarøy, Norway

September 2016

Use-Based Privacy

International Personal Data Systems Workshop, Tromsø, Norway

March 2012

Approximately Strategy-Free Voting

Cryptography Colloquium, Microsoft Research, Redmond, WA
