

# Scott Ruoti

SECURITY & PRIVACY · USABLE PRIVACY & SECURITY · HUMAN-COMPUTER INTERACTION

🏠 344 Min H. Kao Building, 1520 Middle Drive, Knoxville, TN 37996-2250

☎ 865-974-2250 | ✉ ruoti@utk.edu | 🌐 userlab.utk.edu/scott-ruoti

## Summary

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- Active research areas including authentication, usable encryption, key management, cloud security, and helping software developers write secure code
- My research centers on the design, prototyping, and evaluation of secure systems that address user needs
- PI of multiple programs, having obtained \$1,810,000 in external funding
- Recipient of the John Karat Award, which identifies future leaders in the interdisciplinary field of usable security

## Education

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### Ph.D. in Computer Science

DEC 2016

*Brigham Young University*

GPA: 4.0

- Dissertation: *Usable, Secure Content-Based Encryption on the Web*
- Advisor: Kent Seamons
- President of the Computer Science Graduate Student Association

### M.S. in Computer Science

APR 2015

*Brigham Young University*

GPA: 4.0

- Thesis: *Authentication Melee: A Usability Analysis of Seven Web Authentication Systems*

### B.S. in Computer Science, B.A. in Chinese

APR 2011

*Brigham Young University*

GPA: 3.83

- Minor in Mathematics
- Participated in the Chinese Language Flagship Program
  - 2 years of intense Chinese study building professional-level language proficiency in Computer Science
  - Semester of graduate-level Computer Science classes taught in Chinese at Nanjing University (南京大学)

## Professional Experience

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### Assistant Professor

AUG 2018–PRESENT

*University of Tennessee, Knoxville, Knoxville, Tennessee*

**Technical Staff**

AUG 2016–AUG 2018

*MIT Lincoln Laboratory, Lexington, Massachusetts*

- Secured \$1,650,000 in external funding for my research
- PI leading research on blockchain technology
- PI leading research on high-performance encrypted databases
- Chief architect for a cybersecurity architecture designed to protect all U.S. Federal Government Departments and Agencies

**Research Assistant**

AUG 2009–AUG 2016

*Internet Security Research Lab, Brigham Young University, Provo, Utah*

- Led research on secure email, authentication, TLS, and cloud security
- Co-authored several NSF grant proposals covering multiple security topics, resulting in \$500,000 in funding
- Mentored Ph.D., Masters, and undergraduate students

**Ph.D. Year-Round Intern**

DEC 2014–AUG 2016

*Sandia National Laboratories, Livermore, California*

- Directed a team of student researchers investigating cloud security and intrusion detection

**Research Intern**

APR 2014–AUG 2014

*Blue Coat Systems, Draper, Utah*

- Conducted exploratory research into IP address-based detection of malicious network activity

**Ph.D. Software Engineering Intern**

MAY 2013–AUG 2013

*Google, Mountain View, California*

- Designed and integrated push-based, fine-grained authorization into Android

**Research Intern**

MAY 2012–AUG 2012

*Microsoft, Redmond, Washington*

- Designed and prototyped a tool that uses image and facial recognition to automatically tag and organize photos

**Software Engineering Experience**

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**Software Development Engineer Intern**

MAY–JUL 2009

*Microsoft, Redmond, Washington*

MAY–JUL 2010

- Researched free-form ontological model detection and merging in Excel and other office products
- Developed software to consume OData feeds and display cross-platform KPIs in Silverlight
- Participated in cross-team and cross-discipline planning meetings for Office 2013

**Software Development Engineer**

MAR 2008–AUG 2009

*Computer Lab Solutions, Farmington, Utah*

- Oversaw development of new products and maintenance of legacy code for lab management software currently in use at over 310 universities and colleges
- Lead design in refactoring all existing code from Java and C++ to C# and ASP .NET
- Coordinated the efforts of several teammates

## Software Development Engineer

AUG 2004–MAR 2008

*Office of Information Technology, Brigham Young University, Provo, Utah*

- Participated in the development of lab management software used at 4 universities and college
- Managed all releases of all upgrades and new systems to production
- Worked directly with customers to implement feedback into projects
- Assisted with forensic analysis of criminal activity

## Funding

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<b>Co-PI</b>	A Cyber-Attack Detection Platform for Cyber Security of Digital Instrumentation and Control Systems Department of Energy (DoE), Office of Nuclear Energy (ONE), Nuclear Engineering University Program (NEUP)	2019–2022 TOTAL: \$800,000 MINE: \$160,000
<b>PI</b>	Secure Data Provenance Air Force Research Laboratory (AFRL)	2017–2019 TOTAL: \$1,650,000

## Publications

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### Journals and Magazines

- [J6] Yunhe Feng, Qing Cao, Hairong Qi, **Scott Ruoti**. SenCAPTCHA: A Mobile-First CAPTCHA Using Orientation Sensors, *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, Vol. 4, No. 2, June 2020. ACM, 2020. IMWUT 2020 (UBICOMP 2020)
- [J5] **Scott Ruoti**, Ben Kaiser, Arkady Yerukhimovich, Jeremy Clark, Rob Cunningham. Blockchain Technology: What Is It Good For?, *Communications of the ACM*, Vol. 63, No. 1, pages 46–53. ACM, 2020. COMMUNICATIONS OF THE ACM
- [J4] **Scott Ruoti**, Ben Kaiser, Arkady Yerukhimovich, Jeremy Clark, Rob Cunningham. Blockchain Technology: What Is It Good For?, *ACM Queue*, Vol. 17, No. 5, pages 60–87. ACM, 2019. ACM QUEUE
- [J3] **Scott Ruoti**, Kent Seamons. Johnny’s Journey Toward Usable Secure Email, *IEEE Security & Privacy*, Vol. 17, No. 6, pages 72–76, November/December 2019. IEEE, 2019. IEEE SECURITY & PRIVACY
- [J2] **Scott Ruoti**, Jeff Andersen, Luke Dickinson, Scott Heidbrink, Tyler Monson, Mark O’Neill, Ken Reese, Brad Spendlove, Elham Vaziripour, Justin Wu, Daniel Zappala, Kent Seamons. Usability Study of Four Secure Email Tools Using Paired Participants, *ACM Transactions on Privacy and Security*, Vol. 22, No. 2, pages 22–29, April 2019. ACM, 2019. ACM TOPS
- [J1] Mark O’Neill, **Scott Ruoti**, Kent Seamons, Daniel Zappala. TLS Proxies: How Often and Who Cares?, *IEEE Internet Computing*, Vol. 21, No. 3, pages 22–29, May/June 2017. IEEE, 2017. IEEE INTERNET COMPUTING

## Conferences

- [C16] Sean Oesch, Ruba Abu-Salma, Oumar Diallo, Juliane Krämer, James Simmons, Justin Wu, **Scott Ruoti**. Understanding User Perceptions of Security and Privacy for Group Chat: A Survey of Users in the US and UK, *Proceedings of the 36<sup>th</sup> Annual Computer Security Applications Conference*. ACM, 2020. ACSAC 2020
- [C15] Sean Oesch, **Scott Ruoti**. That Was Then, This Is Now: A Security Evaluation of Password Generation, Storage, and Autofill in Browser-Based Password Managers, *Proceedings of the 30<sup>th</sup> USENIX Security Symposium*. USENIX, 2020. USENIX SECURITY 2020  
ACCEPTANCE: 16%
- [C14] **Scott Ruoti**, Jeff Andersen, Tyler Monson, Daniel Zappala, Kent Seamons. A Comparative Usability Study of Key Management in Secure Email, *Proceedings of the 14<sup>th</sup> Symposium on Usable Privacy and Security*. USENIX, 2018. SOUPS 2018  
ACCEPTANCE: 23%
- [C13] Joshua Reynolds, Trevor Smith, Ken Reese, Luck Dickinson, **Scott Ruoti**, Kent Seamons. A Tale of Two Studies: The Best and Worst of YubiKey Usability, *Proceedings of the 38<sup>th</sup> IEEE Symposium on Security and Privacy*. IEEE, 2018. IEEE S&P 2018  
ACCEPTANCE: 11%
- [C12] **Scott Ruoti**, Kent Seamons, Daniel Zappala. Layering Security at Global Control Points to Secure Unmodified Software, *Proceedings of the 2<sup>nd</sup> IEEE Secure Development Conference*. IEEE, 2017. **Best Paper Award**. IEEE SECDEV 2017  
ACCEPTANCE: 32%
- [C11] **Scott Ruoti**, Ben Kaiser, Ariel Hamlin, Cassandra Sparks, Robert Cunningham. PACE: Proactively-Secure Accumulo with Cryptographic Enforcement, *Proceedings of the 21<sup>st</sup> IEEE High Performance Extreme Computing Conference*. IEEE, 2017. IEEE HPEC 2017
- [C10] Mark O'Neill, Scott Heidbrink, **Scott Ruoti**, Jordan Whitehead, Dan Bunker, Luke Dickinson, Travis Hendershot, Joshua Reynolds, Kent Seamons, Daniel Zappala. TrustBase: An Architecture to Repair and Strengthen Certificate-Based Authentication, *Proceedings of the 27<sup>th</sup> USENIX Security Symposium*. USENIX, 2017. USENIX SECURITY 2017  
ACCEPTANCE: 16%
- [C9] **Scott Ruoti**, Scott Heidbrink, Mark O'Neill, Eric Gustafson, Yung Ryn Choe. Intrusion Detection with Unsupervised Heterogeneous Ensembles using Cluster-based Normalization, *Proceedings of the 24<sup>th</sup> IEEE International Conference on Web Services*. IEEE, 2017. IEEE ICWS 2017  
ACCEPTANCE: 22%
- [C8] **Scott Ruoti**, Tyler Monson, Justin Wu, Kent Seamons, Daniel Zappala. Weighing Context and Tradeoffs: How Suburban Adults Selected Their Online Security Posture, *Proceedings of the 13<sup>th</sup> Symposium on Usable Privacy and Security*. USENIX, 2017. SOUPS 2017  
ACCEPTANCE: 27%

- [C7] Mark O’Neill, **Scott Ruoti**, Kent Seamons, Daniel Zappala. TLS Proxies: Friend or Foe?, *Proceedings of the 17<sup>th</sup> ACM Internet Measurement Conference*. ACM, 2016. ACM IMC 2016  
ACCEPTANCE: 25%
- [C6] **Scott Ruoti**, Jeff Andersen, Travis Hendershot, Kent Seamons, Daniel Zappala. Private Webmail 2.0: Simple and Easy-to-Use Secure Email, *Proceedings of the 29<sup>th</sup> ACM Symposium on User Interface Software and Technology*. ACM, 2016. ACM UIST 2016  
ACCEPTANCE: 20%
- [C5] **Scott Ruoti**, Mark O’Neill, Kent Seamons, Daniel Zappala. User Attitudes Toward the Inspection of Encrypted Traffic, *Proceedings of the 12<sup>th</sup> Symposium on Usable Privacy and Security*. USENIX, 2016. SOUPS 2016  
ACCEPTANCE: 28%
- [C4] **Scott Ruoti**, Jeff Andersen, Scott Heidbrink, Mark O’Neill, Elham Vaziripour, Justin Wu, Daniel Zappala, Kent Seamons. “We’re on the Same Page”: A Usability Study of Secure Email Using Pairs of Novice Users, *Proceedings of the 34<sup>th</sup> ACM Conference on Human Factors in Computing Systems*. ACM, 2016. **Honorable Mention for Best Paper**. ACM CHI 2016  
ACCEPTANCE: 23%
- [C3] **Scott Ruoti**, Brent Roberts, Kent Seamons. Authentication Melee: A Usability Analysis of Seven Web Authentication Systems, *Proceedings of the 24<sup>th</sup> International Conference on World Wide Web*. ACM, 2015. WWW 2015  
ACCEPTANCE: 14%
- [C2] **Scott Ruoti**, Nathan Kim, Ben Burgon, Timothy W. van der Horst, and Kent Seamons. Confused Johnny: When Automatic Encryption Leads to Confusion and Mistakes, *Proceedings of the 9<sup>th</sup> Symposium on Usable Privacy and Security*. ACM, 2013. SOUPS 2013  
ACCEPTANCE: 29%
- [C1] Chris Robison, **Scott Ruoti**, Timothy W. van der Horst, and Kent Seamons. Private Facebook Chat, *Proceedings of the 2012 International Conference on Privacy, Security, Risk, and Trust and 2012 International Conference on Social Computing*. IEEE, 2012. IEEE PASSAT/  
SOCIALCOM 2012  
ACCEPTANCE: 22%

### Peer-Reviewed Workshops

- [W3] Tyler Monson, Joshua Reynolds, Trevor Smith, **Scott Ruoti**, Daniel Zappala, Kent Seamons. A Usability Study of Secure Email Deletion, *Proceedings of the 3<sup>rd</sup> European Workshop on Usable Security*. Internet Society, 2018. EURO USEC 2018  
ACCEPTANCE: 47%
- [W2] **Scott Ruoti**, Kent Seamons. End-to-End Passwords, *Proceedings of the 20<sup>th</sup> New Security Paradigms Workshop*. ACM, 2017. NSPW 2017  
ACCEPTANCE: 41%
- [W1] Alexander Afanasyev, J. Alex Halderman, **Scott Ruoti**, Kent Seamons, Yingdi Yu, Daniel Zappala, Lixia Zhang. Content-based Security for the Web, *Proceedings of the 19<sup>th</sup> New Security Paradigms Workshop*. ACM, 2016. NSPW 2016  
ACCEPTANCE: 46%

## Other Workshops

- [O3] Trevor Smith, **Scott Ruoti**, Kent Seamons. Augmenting Centralized Password Management with Application-Specific Passwords, *Proceedings of the 3<sup>rd</sup> Workshop on “Who Are You?! Adventures in Authentication”*. USENIX, 2017. WAY 2017
- [O2] **Scott Ruoti**, Kent Seamons. Standard Metrics and Scenarios for Usable Authentication, *Proceedings of the 2<sup>nd</sup> Workshop on “Who Are You?! Adventures in Authentication”*. USENIX, 2016. WAY 2016
- [O1] **Scott Ruoti**, Jeff Andersen, Kent Seamons. Strengthening Passwords-based Authentication, *Proceedings of the 2<sup>nd</sup> Workshop on “Who Are You?! Adventures in Authentication”*. USENIX, 2016. WAY 2016

## Posters

- [P4] **Scott Ruoti**, Jeff Andersen, Tyler Monson, Daniel Zappala, Kent Seamons. A Comparison of PGP, IBE, and Password-based Secure Email, Poster at the *12<sup>th</sup> Symposium on Usable Privacy and Security*. SOUPS 2015
- [P3] **Scott Ruoti**, Jeff Andersen, Scott Heidbrink, Mark O’Neill, Elham Vaziripour, Justin Wu, Daniel Zappala, Kent Seamons. “We’re on the Same Page”: A Usability Study of Secure Email Using Pairs of Novice Users, Poster at the *12<sup>th</sup> Symposium on Usable Privacy and Security*. SOUPS 2015
- [P2] **Scott Ruoti**, Brent Roberts, Kent Seamons. Authentication Melee: A Usability Analysis of Seven Web Authentication Systems, Poster at the *11<sup>th</sup> Symposium on Usable Privacy and Security*. **Distinguished poster award**. SOUPS 2015
- [P1] Mark O’Neill, **Scott Ruoti**, Kent Seamons, Daniel Zappala. TLS Proxies: Friend or Foe?, Poster at the *21<sup>st</sup> ACM SIGSAC Conference on Computer and Communications Security*. ACM CCS 2014

## Presentations

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24. Understanding Blockchain Technology and Its Use Cases Nov. 26, 2019  
Invited Talk, Tennessee Tech University
23. Securing Email for the Masses JUL. 10, 2019  
Invited Talk, CURRENT Research Center, University of Tennessee, Knoxville
22. Securing Email for the Masses JAN. 24, 2019  
Invited Talk, Oak Ridge National Laboratories
21. Securing Email for the Masses MAR. 9, 2018  
Invited Talk, Clemson University
20. Securing Email for the Masses FEB. 26, 2018  
Invited Talk, University of Tennessee

19. Securing Email for the Masses  
Invited Talk, New York University FEB. 16, 2018
18. Securing Webmail for the Masses  
Invited Talk, University of Massachusetts Lowell FEB. 8, 2018
17. End-to-End Passwords  
20<sup>th</sup> New Security Paradigms Workshop, Santa Cruz, California OCT. 4, 2017
16. Weighing Context and Tradeoffs: How Suburban Adults Selected  
Their Online Security Posture  
13<sup>th</sup> Symposium on Usable Privacy and Security, San Jose,  
California JUL. 14, 2017
15. Cryptographically Enforcing Visibility Fields  
Accumulo Summit, College Park, Maryland OCT. 13, 2016
14. Standard Metrics and Scenarios for Usable Authentication  
2<sup>nd</sup> Workshop on “Who Are You?! Adventures in  
Authentication”, Denver, Colorado JUN. 22, 2016
13. User Attitudes Toward the Inspection of Encrypted Traffic  
2<sup>nd</sup> Workshop on “Who Are You?! Adventures in  
Authentication”, San Jose, California MAY 10, 2016
12. User Attitudes Toward the Inspection of Encrypted Traffic  
12<sup>th</sup> Symposium on Usable Privacy and Security, Denver,  
Colorado JUN. 23, 2016
11. “We’re on the Same Page”: A Usability Study of Secure Email  
Using Pairs of Novice Users  
34<sup>th</sup> ACM Conference on Human Factors in Computing Systems,  
Denver, Colorado JUN. 22, 2016
10. Securing Webmail for the Masses  
Invited Talk, University of Utah APR. 13, 2016
9. Securing Webmail for the Masses  
Invited Talk, Massachusetts Institute of Technology Lincoln  
Laboratory MAR. 2, 2016
8. Securing Webmail for the Masses  
Invited Talk, University of Tennessee FEB. 17, 2016
7. When the Rubber Meets the Road  
Invited Talk, Sandia National Laboratories JAN. 28, 2016
6. Helping Individuals and Organizations Protect Their Online  
Communication and Data  
Invited Talk, Sandia National Laboratories NOV. 23, 2015
5. Security and Usability Research at BYU  
Invited Talk, College of Physical and Mathematics, College  
Volunteer Leadership Council, Brigham Young University OCT. 9, 2015
4. The Conundrum of Secure Email  
Lightning Talk, 11<sup>th</sup> Symposium on Usable Privacy and Security,  
Ottawa, Canada JUL. 23, 2015

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| 3. | Usable Security for Webmail and Single Sign-on<br>Invited Talk, Symantec CTO Tech Exchange, Culver City,<br>California   | OCT. 17, 2013 |
| 2. | Confused Johnny: When Automatic Encryption Leads to<br>Confusion and Mistakes<br>9 <sup>th</sup> Symposium on Usable Privacy and Security, New Castle,<br>United Kingdom         | JUL. 25, 2013 |
| 1. | Private Facebook Chat<br>2012 International Conference on Privacy, Security, Risk, and<br>Trust and 2012 International Conference on Social Computing,<br>Amsterdam, Netherlands | SEP. 5, 2012  |

## Professional Service

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### Organizing Committee

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| 5. | 42 <sup>nd</sup> IEEE Symposium on Security and Privacy   | IEEE S&P 2021 |
| 4. | 41 <sup>st</sup> IEEE Symposium on Security and Privacy   | IEEE S&P 2020 |
| 3. | 15 <sup>th</sup> Symposium on Usable Privacy and Security | SOUPS 2019    |
| 2. | 40 <sup>th</sup> IEEE Symposium on Security and Privacy   | IEEE S&P 2019 |
| 1. | 14 <sup>th</sup> Symposium on Usable Privacy and Security | SOUPS 2018    |

### Award Committee

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|----|---|------------|
| 2. | Test of Time Award for the 16 <sup>th</sup> Symposium on Usable Privacy<br>and Security | SOUPS 2020 |
| 1. | John Karat Award for the 16 <sup>th</sup> Symposium on Usable Privacy<br>and Security   | SOUPS 2020 |

### Program Committee

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|-----|--|--------------------|
| 12. | 5 <sup>th</sup> Workshop on “Who Are You?! Adventures in Authentication”                   | WAY 2020           |
| 11. | 5 <sup>th</sup> European Workshop on Usable Security                                       | EUROUSEC 2020      |
| 10. | 16 <sup>th</sup> Symposium on Usable Privacy and Security                                  | SOUPS 2020         |
| 9.  | 15 <sup>th</sup> Symposium on Usable Privacy and Security                                  | SOUPS 2019         |
| 8.  | 4 <sup>th</sup> European Workshop on Usable Security                                       | EUROUSEC 2019      |
| 7.  | 3 <sup>rd</sup> European Workshop on Usable Security                                       | EUROUSEC 2018      |
| 6.  | 2018 Workshop on Usable Security   | USEC 2018          |
| 5.  | 3 <sup>rd</sup> IEEE European Symposium on Security and Privacy                            | IEEE EUROUSEC 2018 |
| 4.  | 7 <sup>th</sup> International Workshop on Socio-Technical Aspects in<br>Security and Trust | STAST 2018         |
| 3.  | 3 <sup>rd</sup> Workshop on “Who Are You?! Adventures in Authentication”                   | WAY 2017           |
| 2.  | 2 <sup>nd</sup> European Workshop on Usable Security                                       | EUROUSEC 2017      |
| 1.  | 1 <sup>st</sup> European Workshop on Usable Security                                       | EUROUSEC 2016      |



## Reviewing for Journals and Magazines

7.	ACM Computing Surveys	ACM CSUR
6.	ACM Transaction on Privacy and Security	ACM TOPS
5.	Behavioral Public Policy	BPP
4.	Future Generation Computer Systems	FGCS
3.	IEEE Security & Privacy Magazine	IEEE S&P MAGAZINE
2.	IEEE Transactions on Dependable and Secure Computing	IEEE TDSC
1.	IEEE Transactions of Information Forensics and Security	IEEE TIFS

## Reviewing for Conferences

12.	38 <sup>th</sup> ACM Conference on Human Factors in Computing Systems	ACM CHI 2020
11.	37 <sup>th</sup> ACM Conference on Human Factors in Computing Systems	ACM CHI 2019
10.	18 <sup>th</sup> Privacy Enhancing Technologies Symposium	PETS 2018
9.	36 <sup>th</sup> ACM Conference on Human Factors in Computing Systems	ACM CHI 2018
8.	13 <sup>th</sup> Symposium on Usable Privacy and Security Posters	SOUPS POSTERS 2017
7.	30 <sup>th</sup> ACM Symposium on User Interface Software and Technology	ACM UIST 2017
6.	35 <sup>th</sup> ACM Conference on Human Factors in Computing Systems	ACM CHI 2017
5.	23 <sup>rd</sup> ACM SIGSAC Conference on Computer and Communications Security	ACM CCS 2016
4.	12 <sup>th</sup> Symposium on Usable Privacy and Security Posters	SOUPS POSTERS 2016
3.	34 <sup>th</sup> ACM Conference on Human Factors in Computing Systems	ACM CHI 2016
2.	4 <sup>th</sup> IEEE Workshop on Mobile Security Technologies	IEEE MOST 2015
1.	33 <sup>rd</sup> ACM Conference on Human Factors in Computing Systems	ACM CHI 2015

## Courses Taught

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### University of Tennessee, Knoxville

COSC 483/583	Applied Cryptography	FALL 2020
COSC 466/566	Web Security	SPRING 2020
COSC 494/594	Human Factors in Security	FALL 2019
COSC 466/566	Web Security	SPRING 2019
COSC 494/594	Usable Security and Blockchain Technology	FALL 2018

### Brigham Young University

CS 465	Computer Security	WINTER 2016
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## Honors and Awards

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### Professional

- 2017 *Best Paper Award*  
2<sup>nd</sup> IEEE Secure Development Conference (SecDev 2017)
- 2017 *John Karat Usable Privacy and Security Student Research Award*  
13<sup>th</sup> Symposium on Usable Privacy and Security
- 2017 *Excellent Reviewer Recognition*  
37<sup>th</sup> ACM Conference on Human Factors in Computing Systems (CHI 2017)
- 2016 *Honorable Mention for Best Paper*  
34<sup>th</sup> ACM Conference on Human Factors in Computing Systems (CHI 2016)
- 2016 *Excellent Reviewer Recognition*  
34<sup>th</sup> ACM Conference on Human Factors in Computing Systems (CHI 2016)
- 2015 *Distinguished Poster Award*  
12<sup>th</sup> Symposium on Usable Privacy and Security

### Student

- 2016 *Phi Kappa Phi Inductee*  
Phi Kappa Phi Chapter of Brigham Young University
- 2014 *Competitive Scholarship Recipient*  
The International Information System Security Certification Consortium [(ISC)<sup>2</sup>]
- 2013 *Competitive Scholarship Recipient*  
The International Information System Security Certification Consortium [(ISC)<sup>2</sup>]

## Languages

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- English** Native Language
- Mandarin Chinese** Fluent, near native reading, writing, and speaking
- 汉语水平考试 (HSK)—Level 6 (highest Level)
  - Oral Proficiency Interview—Superior (highest Level)

## Professional Skills

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- Programming** C/C++, C#, Java, JavaScript, Python, SQL
- Familiar with: F#, MatLab, Mathematica, PHP, Ruby, Scheme, Visual Basic .NET
- Web** HTML5, JavaScript, ES6+, ASP .NET
- Frameworks** Bootstrap, ExtJS, JQuery, MooTools, NodeJS, WinForms, WPF
- Databases** Essent, FireBird, Microsoft Access, Microsoft SQL Server, MySQL, Oracle iSQL, SQLite
- Platform** Centos-Based Linux, Debian-Based Linux, MacOS, Windows