

SOUPS 2019
Fifteenth Symposium on Usable Privacy and Security
August 12–13, 2019
Santa Clara, CA, USA

Populations and Scales

- Cooperative Privacy and Security: Learning from People with Visual Impairments and Their Allies**1
Jordan Hayes, Smirity Kaushik, Charlotte Emily Price, and Yang Wang, *Syracuse University*
- Privacy and Security Threat Models and Mitigation Strategies of Older Adults**21
Alisa Frik, *International Computer Science Institute (ICSI) and University of California, Berkeley*; Leysan Nurgalieva, *University of Trento*; Julia Bernd, *International Computer Science Institute (ICSI)*; Joyce Lee, *University of California, Berkeley*; Florian Schaub, *University of Michigan*; Serge Egelman, *International Computer Science Institute (ICSI) and University of California, Berkeley*
- Evaluating Users’ Perceptions about a System’s Privacy: Differentiating Social and Institutional Aspects.**41
Oshrat Ayalon and Eran Toch, *Tel Aviv University*
- A Self-Report Measure of End-User Security Attitudes (SA-6)**61
Cori Faklaris, Laura Dabbish, and Jason I. Hong, *Carnegie Mellon University*

Security Behaviors and Experiences

- The Effect of Entertainment Media on Mental Models of Computer Security**79
Kelsey R. Fulton, Rebecca Gelles, Alexandra McKay, Richard Roberts, Yasmin Abdi, and Michelle L. Mazurek, *University of Maryland*
- A Typology of Perceived Triggers for End-User Security and Privacy Behaviors.**97
Sauvik Das, *Georgia Institute of Technology*; Laura A. Dabbish and Jason I. Hong, *Carnegie Mellon University*
- Replication: No One Can Hack My Mind Revisiting a Study on Expert and Non-Expert Security Practices and Advice**117
Karoline Busse and Julia Schäfer, *University of Bonn*; Matthew Smith, *University of Bonn/Fraunhofer FKIE*
- “Something isn’t secure, but I’m not sure how that translates into a problem”: Promoting autonomy by designing for understanding in Signal.**137
Justin Wu, Cyrus Gattrell, Devon Howard, and Jake Tyler, *Brigham Young University*; Elham Vaziripour, *Utah Valley University*; Kent Seamons and Daniel Zappala, *Brigham Young University*
- “I was told to buy a software or lose my computer. I ignored it”: A study of ransomware.**155
Camelia Simoiu, *Stanford University*; Christopher Gates, *Symantec*; Joseph Bonneau, *New York University*; Sharad Goel, *Stanford University*

New Paradigms

- Enhancing Privacy through an Interactive On-demand Incremental Information Disclosure Interface: Applying Privacy-by-Design to Record Linkage**175
Hye-Chung Kum, *Population Informatics Lab, Texas A&M University*; Eric D. Ragan, *INDIE Lab, University of Florida*; Gurudev Ilangovan, Mahin Ramezani, Qinbo Li, and Cason Schmit, *Population Informatics Lab, Texas A&M University*
- From Usability to Secure Computing and Back Again.**191
Lucy Qin, Andrei Lapets, Frederick Jansen, Peter Flockhart, Kinan Dak Albab, and Ira Globus-Harris, *Boston University*; Shannon Roberts, *University of Massachusetts Amherst*; Mayank Varia, *Boston University*
- Certified Phishing: Taking a Look at Public Key Certificates of Phishing Websites**211
Vincent Drury and Ulrike Meyer, *Department of Computer Science, RWTH Aachen University*

Developers and Sysadmins

- “We Can’t Live Without Them!” App Developers’ Adoption of Ad Networks and Their Considerations of Consumer Risks**225
Abraham H. Mhaidli, Yixin Zou, and Florian Schaub, *University of Michigan School of Information*
- Usability Smells: An Analysis of Developers’ Struggle With Crypto Libraries**245
Nikhil Patnaik, Joseph Hallett, and Awais Rashid, *University of Bristol*
- System Administrators Prefer Command Line Interfaces, Don’t They? An Exploratory Study of Firewall Interfaces**259
Artem Voronkov, Leonardo A. Martucci, and Stefan Lindskog, *Karlstad University*
- Keepers of the Machines: Examining How System Administrators Manage Software Updates**273
Frank Li, *University of California, Berkeley*; Lisa Rogers, *University of Maryland*; Arunesh Mathur, *Princeton University*; Nathan Malkin, *University of California, Berkeley*; Marshini Chetty, *Princeton University*

Authentication

- Communicating Device Confidence Level and Upcoming Re-Authentications in Continuous Authentication Systems on Mobile Devices**289
Lukas Mecke, *University of Applied Sciences Munich, Munich, Germany and LMU Munich, Munich, Germany*; Sarah Delgado Rodriguez and Daniel Buschek, *LMU Munich, Munich, Germany*; Sarah Prange, *University of Applied Sciences Munich, Munich, Germany and Bundeswehr University Munich, Munich, Germany and LMU Munich, Munich, Germany*; Florian Alt, *Bundeswehr University Munich, Munich, Germany*
- Exploring Intentional Behaviour Modifications for Password Typing on Mobile Touchscreen Devices**303
Lukas Mecke, *University of Applied Sciences Munich, Munich, Germany and LMU Munich, Munich, Germany*; Daniel Buschek and Mathias Kiermeier, *LMU Munich, Munich, Germany*; Sarah Prange, *University of Applied Sciences Munich, Munich, Germany and Bundeswehr University Munich, Munich, Germany and LMU Munich, Munich, Germany*; Florian Alt, *Bundeswehr University Munich, Munich, Germany*
- Why people (don’t) use password managers effectively**319
Sarah Pearman, Shikun Aerin Zhang, Lujo Bauer, Nicolas Christin, and Lorrie Faith Cranor, *Carnegie Mellon University*
- Of Two Minds about Two-Factor: Understanding Everyday FIDO U2F Usability through Device Comparison and Experience Sampling**339
Stéphane Ciolino, *OneSpan Innovation Centre & University College London*; Simon Parkin, *University College London*; Paul Dunphy, *OneSpan Innovation Centre*
- A Usability Study of Five Two-Factor Authentication Methods**357
Ken Reese, Trevor Smith, Jonathan Dutson, Jonathan Armknecht, Jacob Cameron, and Kent Seamons, *Brigham Young University*

Personal Privacy

- Personal Information Leakage by Abusing the GDPR “Right of Access”**371
Mariano Di Martino and Pieter Robyns, *Hasselt University/tUL, Expertise Centre For Digital Media*; Winnie Weyts, *Hasselt University - Law Faculty*; Peter Quax, *Hasselt University/tUL, Expertise Centre For Digital Media, Flanders Make*; Wim Lamotte, *Hasselt University/tUL, Expertise Centre For Digital Media*; Ken Andries, *Hasselt University - Law Faculty, Attorney at the Brussels Bar*
- An Empirical Analysis of Data Deletion and Opt-Out Choices on 150 Websites**387
Hana Habib, *Carnegie Mellon University*; Yixin Zou, *University of Michigan*; Aditi Jannu, Neha Sridhar, Chelse Swoopes, Alessandro Acquisti, Lorrie Faith Cranor, and Norman Sadeh, *Carnegie Mellon University*; Florian Schaub, *University of Michigan*
- The Fog of Warnings: How Non-essential Notifications Blur with Security Warnings**407
Anthony Vance, *Temple University*; David Eargle, *University of Colorado Boulder*; Jeffrey L. Jenkins, C. Brock Kirwan, and Bonnie Brinton Anderson, *Brigham Young University*

(continued on next page)

Wearables and Smart Homes

“There is nothing that I need to keep secret”: Sharing Practices and Concerns of Wearable Fitness Data 421

Abdulmajeed Alqhatani and Heather Richter Lipford, *University of North Carolina at Charlotte*

“I don’t own the data”: End User Perceptions of Smart Home Device Data Practices and Risks 435

Madiha Tabassum, *University of North Carolina at Charlotte*; Tomasz Kosinski, *Chalmers University of Technology*;

Heather Lipford, *University of North Carolina at Charlotte*

More than Smart Speakers: Security and Privacy Perceptions of Smart Home Personal Assistants 451

Noura Abdi, *King’s College London*; Kopo M. Ramokapane, *University of Bristol*; Jose M. Such, *King’s College London*