

# PATRICK GAGE KELLEY

Mid-Tenure Review – November 2014

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Assistant Professor  
Department of Computer Science  
University of New Mexico

# Patrick Gage Kelley BIOSKETCH

## Professional preparation

Rochester Institute of Technology Rochester, NY	Computer Engineering B.S.	2006
	English Literature B.S.	2006
Carnegie Mellon University Pittsburgh, PA	Computer Science M.S.	2009
	Computer Science Ph.D.	2013

## Appointment

Assistant Professor of Computer Science, 2012–present  
University of New Mexico, Albuquerque, NM

## Employment

Department of Computer Science, School of Engineering  
Director, EXIT  
Affiliate faculty member in IFDM  
Affiliate faculty member in ARTS Lab  
Affiliate faculty member in OILS

PhD Student, Carnegie Mellon University, Pittsburgh, PA, 2006-2012

Researcher, Intel Labs Seattle, Seattle, WA, 2011

Consultant and Designer, Wombat Security Technologies,  
Pittsburgh, PA, 2008-2012

National Security Agency, Fort Meade, MD, 2004-2005

## Products

1. Patrick Gage Kelley, Lorrie Faith Cranor, Norman Sadeh. *Privacy as Part of the App Decision Making Process*. SIGCHI Conference on Human Factors in Computing Systems (CHI) 2013.
2. Patrick Gage Kelley, Sunny Consolvo, Lorrie Faith Cranor, Jaeyeon Jung, Norman Sadeh, David Wetherall. *A Conundrum of Permissions: Installing Applications on an Android Smartphone*. Workshop on Usable Security. 2012.
3. Patrick Gage Kelley, Lucian Cesca, Joanna Bresee, and Lorrie Faith Cranor. *Standardizing Privacy Notices: An Online Study of the Nutrition Label Approach*. SIGCHI Conference on Human Factors in Computing Systems (CHI) 2010.
4. Patrick Gage Kelley, Joanna Bresee, Robert W. Reeder, and Lorrie Faith Cranor. *Design of A Privacy Label*. Symposium on Usable Privacy and Security (SOUPS). 2009.
5. Patrick Gage Kelley, Paul Hankes Drielsma, Norman Sadeh, and Lorrie Faith Cranor. *User Controllable Learning of Security and Privacy Policies*. ACM Workshop on Artificial Intelligence and Security (AISec). 2008.

## **Synergistic Activities**

1. Works with various government groups and non-profits to help create better guidelines for mobile application privacy and development. Is an appointed member of the ACM SIGCHI Executive Committee, serving as the Adjunct Chair for Media + Brand. Recently part of the Mobile Privacy Advisory Group to California Office of the Attorney General.
2. Is developing a set of HCI and Privacy focused courses at the University of New Mexico the state's flagship research university and a Hispanic-Serving Institution.
3. Worked as a consultant and designer for Wombat Security Technologies: a CMU startup to empower users to avoid phishing attacks through education and interactive materials.
4. Has over a decade of work with middle and high school students through workshops and tutoring promoting STEM education and careers, as well as women in Computer Science and Engineering. Including Andrew's Leap in Pittsburgh, SWE's Vitality Taskforce, RIT's TEAK project, the Expanding Your Horizons workshop in Seattle, and Hack for Change Albuquerque.
5. Actively engages with the art community, helped facilitate the STUDIO for Creative Inquiry's three ART & CODE workshops, worked with art students, taught information visualization and data display.

## **Collaborators**

Alessandro Acquisti (CMU)	Kurt Luther (Virginia Tech)
Hazim Almuhiemedi (CMU)	Harsha Madhyastha (UCR)
Rebecca Balebako (CMU)	Aleecia McDonald (Stanford)
Lujo Bauer (CMU)	Michelle Mazurek (UMaryland)
Michael Benisch (Rocket Fuel)	Jonathan Mungan (21CT)
Travis Breaux (CMU)	Sean Munson (UW)
Joanna Bresee (Microsoft)	Meeko Oishi (UNM)
Serge Egelman (Berkeley)	Kenneth Pimple (UIndiana)
Tim Castillo (UNM)	Ram Ravichandran (Twitter)
Lorrie Faith Cranor (CMU)	Robert W. Reeder (Google)
Lucian Cesca (HealthFinch)	Norman Sadeh (CMU)
Sunny Consolvo (Google)	Manya Sleeper (CMU)
Justin Cranshaw (CMU)	Rich Shay (CMU)
Nicolas Christin (CMU)	Vanessa Svihla (UNM)
Paul Hankes Drielsma (Apple)	Lydia Tapia (UNM)
Michalis Faloustos (UNM)	Eran Toch (Tel-Aviv U)
Ian Fette (Google)	Janice Tsai (Microsoft)
Daniel Freeman (Salsify)	Blase Ur (CMU)
Jason Hong (CMU)	Yang Wang (Syracuse)
Jaeyeon Jung (Microsoft)	Myra Washington (UNM)
Matthew Kay (UW)	Jason Wiese (CMU)
Saranga Komanduri (CMU)	David Wetherall (UW)
Pedro Leon (CMU)	John Zimmerman (CMU)

**Graduate Advisors:** Lorrie Faith Cranor and Norman Sadeh (CMU)

# SCHOLARLY WORK STATEMENT

*People are increasingly expected to manage complex privacy settings in their normal online interactions. From shopping to social networks, consumers make decisions about sharing their personal information with corporations and contacts, frequently with little assistance. Current solutions require people to read long documents or go out of their way to manage complex settings buried deep in management interfaces, all of which lead to little or no actual control. My goal is to help people cope with a complicated and shifting privacy and technology landscape.*

## CONTINUING WORK

### **Online Privacy Policies**

I began this work with the goal of designing a privacy policy format that would actually benefit online consumers. Our goal was a format that would help people accurately and quickly find information, make comparisons between policies easier, and provide a more enjoyable experience. Our design approach allowed us to explore other efforts in standardizations, labeling, and designing privacy policy formats. With this background we followed an iterative design process, creating a small library of testable privacy label formats.

The label that performed the best across three user studies allowed for information to be found in the same place every time for every company [30,35]. It removed leeway and complicated terminology by using four standard symbols that could be easily compared. It provided quick, high-level visual feedback when looking at the overall intensity of the label, could be printed to a single sheet, fit in a standard browser window, and had a glossary of useful terms attached. People who used it to find privacy information rated it not only better than the text policies, but actually enjoyable to use.

For this work, I was awarded First Place at the ACM SIGCHI 2009 Student Research Competition and then First Place in the ACM Grand Finals in June 2010. The work was also selected for inclusion in the Future of Privacy Forum Papers for Policy Makers, 2010.

My work on online privacy policies continues with a longitudinal review of how privacy labels and other standardization efforts have effect the privacy policies of companies over the past five years. I have also been studying and reviewing the use of icons for representing privacy, both on the web and on mobile devices [1,6].

### **Smartphone Application Permissions**

With each smartphone sold, more users are downloading applications from the Google Play and Apple App Stores. Users have to make two privacy/security choices when reviewing potential applications for their device:

1. Do I believe this application will compromise the security of my phone if I install it?
2. Do I trust this developer with access to my personal information?

Users must make these decisions based on advertising, word-of-mouth information, market reviews and ratings, and on Android, the permissions display. In initial work, I examined how the Android permissions display is understood and how it could be better designed to help users make these decisions [17].

I found that while users recall viewing the permissions display, they do not understand Android permissions. Users are also largely uninformed about the potential for malware or malicious applications to exist in the Android Market. They have difficulty describing the possible harm that could be caused by applications collecting and sharing their personal information.

After this, I designed an alternate permissions screen, simplifying the information, changing the placement of the display, showing un-used permissions, and allowing for additional explanation. Unsurprisingly, this display, as well as proposed displays by several other research teams all perform better than the current Google Play standard [13]

I have since suggested a different way forward than the current Google Play permissions display, a display that removes complete permissions views entirely from standard views, and instead presents permissions only relatively. I hope to show better information design can improve consumer's privacy decision making [UR2].

## NEW WORK

### **Medical Usable Privacy and Security**

The next major frontier for digital privacy is medical and health information. From personal health records being rolled out to the public by hospitals and care providers to health apps monitoring your every step and heartbeat by your smart phone or smart wearable, medical and health information is becoming ubiquitous. By using these technologies people are facing new and often unseen choices regarding aspects of their information which have never been online and networked before. Building controls with an understanding around the sharing of this data is a new challenge for privacy advocates, and possibly the most sensitive data we have seen collected, quantified, and shared.

I have begun work in two areas here. With a MD student at UNM, we are evaluating the Personal Health Record (PHR) systems deployed by UNMH and Presbyterian with consumers. By exploring the usability issues and privacy concerns with these systems we can help apply privacy and design thinking to future generations of health record monitoring.

Additionally, I received a Google Research Award to begin investigating the privacy concerns around mobile apps for health tracking and prescription filling, which will begin in the summer with a second MD student.

## **Technology Ethics Education and Social Network Privacy**

A focus of my research over the last decade has been educating consumers on the privacy choices they can make: what data sharing they can control, how to opt-out, how to protect themselves online. As higher profile attacks continue to make the news: Anonymous hacking sites, the Fapping and the Snapping, Heartbleed and Shellshock, and vulnerabilities in cloud services and passwords, I hope to provide an educational platform that allows anyone to interactively explore the most recent issues in technology ethics, security, and privacy. This work dovetails nicely with teaching the CS department's technology ethics class.

Additionally, I was recently awarded an NSF grant to explore privacy and security education issues with a specific group of people: teenagers of varying sociocultural status. By building out that work here in New Mexico we can better understand how the digital divide is impacting the privacy understanding of high school students across the state, from Albuquerque Academy to the Zuni Pueblo.

It is these efforts, the ability to broadly educate and inform people that excite me the most about my place in the research community. As a group we have the ability and the necessity to disseminate our own knowledge and research to the public. It is this knowledge, in the form of games, guidelines, papers, tips, and tricks that can help people make better choices with their information. And this work will not simply succeed or fail, but will continue to increase in importance as we see data used in more elaborate and complicated ways, more data and more types of data indexed and analyzed, and more data widely and often secretly shared.

# PUBLICATION LIST

## Under review and in preparation

Elizabeth Yakes Jimenez, Vanessa Svihla, Tim Castillo, Tabitha McKay, Andrea Cantarero, Kameron Baumgardner, Patrick Gage Kelley, Ingrid Hernandez. "Interactive Learning Assessment: Simulating Professional Practice." Submitted to National Agri-science Education Conference 2014.

Patrick Gage Kelley and Javier Chavez, Comparative Privacy Displays in App Marketplaces. International Workshop on Mobile Computing Systems and Applications (HotMobile) 2015.

Fernando Serrano, Patrick Gage Kelley. Exploring Anonymity Online. Proceedings on Privacy Enhancing Technologies (PoPETs) 2015.

Anand Paturi, Patrick Gage Kelley, Shubhasish Mazumdar. Granular Privacy Assessment for Android Mobile Users. Workshop on Usable Security (USEC) 2015.

Steven Garcia, Patrick Gage Kelley, Yin Yang. Interactive Image Segmentation on Mobile Phones Using Hierarchical Graph Cut. Graphics Interface 2015.

## Refereed Journal Publications

1. Kelley, P.G. Privacy as Iconography: [Failing to] Reduce Complex Concepts to Pixels. ACM SIGDOC Communication Design Quarterly. Forthcoming, 2015.
2. Benisch, M., Kelley, P.G., Sadeh, N., and Cranor, L.F. Capturing location-privacy preferences: quantifying accuracy and user-burden tradeoffs. Personal and Ubiquitous Computing, 2010.
3. Tsai, J., Kelley, P.G., Cranor, L.F., and Sadeh, N. "Location-Sharing Technologies: Privacy Risks and Controls." *I/S: A Journal of Law and Policy for the Information Society*, 2010.
4. Sadeh, N., Hong, J., Cranor, L., Fette, I., Kelley, P.G., Prabaker, M., and Rao, J. "Understanding and Capturing People's Privacy Policies in a People Finder Application", *Privacy Usability Journal*. Vol. 13, No. 6, August 2009.

## Refereed Conference and Workshop Publications

5. Sleeper, M., Acquisti, A., Cranor, L.F., Kelley, P.G., Munson, S., Sadeh, N. "I would like to..., I shouldn't..., I wish I...: Exploring behavior-change goals for social networking sites" Forthcoming at Computer-Supported Cooperative Work and Social Computing (CSCW) 2015
6. Kelley, P.G., Privacy as Iconography: [Failing to] Reduce Complex Concepts to Pixels. Forthcoming at the Symposium on Communicating Complex Information (SCCI) 2015.
7. Adamson, T., Baxter J., Manavi, K., Suknot, A., Jacobson, B., Kelley, P.G., Tapia, L. Molecular Tetris: Crowdsourcing Molecular Docking Using Path-Planning and Haptic Devices. Motion in Games (MIG) 2014.

8. Suknot, A., Chavez, T., Rackley, N., Kelley, P.G. Immaculacy: A game of privacy. Student Game Design Contest. SIGCHI Annual Symposium on Computer-Human Interaction in Play (CHI PLAY) 2014.
9. Cranshaw, J.B., Luther, K., Kelley, P.G., Sadeh, N. Curated city: capturing individual city guides through social curation. SIGCHI Conference on Human Factors in Computing Systems (CHI) 2014.
10. Mazurek, M.L, Komanduri, S., Vidas, T., Bauer, L., Christin, N., Cranor, L.F., Kelley, P.G. Measuring password guessability for an entire university. ACM SIGSAC conference on Computer & communications security (CCS '13), 2013
11. Kelley, P.G., Komanduri, S., Mazurek, M.L., Shay, R., Vidas, T., Bauer, L., Christin, N., Cranor, L.F. The impact of length and mathematical operators on the usability and security of system-assigned one-time PINs. Workshop on Usable Security (USEC) at Financial Cryptography and Data Security (FC), 2013
12. Kelley, P.G., Sleeper, M., and Cranshaw, J. Conducting Research on Twitter: A Call for Guidelines and Metrics. Measuring Networked Social Privacy Workshop at Computer-Supported Cooperative Work and Social Computing (CSCW) 2013.
13. Kelley, P.G., Cranor, L.F., Sadeh, N. "Privacy as Part of the App Decision-Making Process." SIGCHI Conference on Human Factors in Computing Systems (CHI) 2013.
14. Sleeper, M., Cranshaw, J., Kelley, P.G., Ur, B., Acquisti, A., Cranor, L.F., Sadeh, N. "I read my Twitter the next morning and was astonished: A conversational perspective on Twitter regrets." SIGCHI Conference on Human Factors in Computing Systems (CHI) 2013.
15. Ur, B., Kelley, P.G., Komanduri, S., Lee, J., Maass, M., Mazurek, M.L., Passaro, T., Shay, R., Vidas, T., Bauer, L., Christin, N., and Cranor, L.F. "How does your password measure up? The effect of strength meters on password creation." USENIX Security, 2012.
16. Shay, R., Kelley, P.G., Komanduri, S., Mazurek, M.L., Ur, B., Vidas, T., Bauer, L., Christin, N., and Cranor, L.F. "Correct horse battery staple: Exploring the usability of system-assigned passphrases." Symposium on Usable Privacy and Security (SOUPS) 2012.
17. Kelley, P.G., Consolvo, S., Cranor, L.F., Jung, J., Sadeh, N., Wetherall, D. "A Conundrum of Permissions: Installing Applications on an Android Smartphone." Workshop on Usable Security (USEC) at Financial Cryptography and Data Security (FC), 2012.
18. Kelley, P.G., Komanduri, S., Mazurek, M.L., Shay, R., Ur, B., Vidas, T., Bauer, L., Christin, N., and Cranor, L.F. "Guess again (and again and again): Measuring password strength by simulating password-cracking algorithms." IEEE Security & Privacy 2012.
19. Kelley, P.G., Brewer, R., Mayer, Y., Cranor, L.F., and Sadeh, N. "An Investigation into Facebook Friend Grouping." IFIP TC.13 International Conference on Human-Computer Interaction (INTERACT) 2011.
20. Komanduri, S., Shay, R., Kelley, P.G., Mazurek, M.L., Bauer, L., Christin, N., and Cranor, L.F. "Of Passwords and People: Measuring the Effect of Password-Composition Policies." SIGCHI Conference on Human Factors in Computing Systems (CHI) 2011.



21. Kelley, P.G., Benisch, M., Cranor, L.F., and Sadeh, N. "When Are Users Comfortable Sharing Locations with Advertisers?" SIGCHI Conference on Human Factors in Computing Systems (CHI) 2011.
22. Kay, M., Choe, E.K., Shepherd, J., Greenstein, B., Consolvo, S., Kelley, P.G., and Kientz, J. "Lullaby: environmental sensing for sleep self-improvement" Workshop on Personal Informatics at SIGCHI Conference on Human Factors in Computing Systems (CHI) 2011.
23. Kelley, P.G., Cesca, L.J., Bresee, J., and Cranor, L.F. "Intentional Privacy Policy Design" Workshop on Networked Privacy at SIGCHI Conference on Human Factors in Computing Systems (CHI) 2011.
24. Balebako, R., Leon, P., Almuhimedi, H., Kelley, P.G., Mugan, J., Acquisti, A., Cranor, L.F., and Sadeh, N. "Nudging Users Towards Privacy on Mobile Devices" Workshop on Persuasion, Influence, Nudge & Coercion through Mobile Devices (PINC) at SIGCHI Conference on Human Factors in Computing Systems (CHI) 2011.
25. Sadeh, N., and Kelley, P.G. "User-Controllable Location Privacy" Privacy Management in Mobile Applications (PriMo), 2011.
26. Kelley, P.G., Tsai, J., Cranor, L.F., and Sadeh, N. "Location-Sharing Technologies: Privacy Risks and Controls." Privacy Management in Mobile Applications (PriMo), 2011.
27. Wang, X.S., Choffnes, D., Kelley, P.G., Greenstein, B., and Wetherall, D. "Measuring and Predicting Web Login Safety." Workshop on Measurements Up and Down the STack (W-MUST) 2011
28. Shay, R., Komanduri, S., Kelley, P.G., Leon, P.G., Mazurek, M.L., Bauer, L., Christin, N., Cranor, L.F., and Egelman, S. "Encountering Stronger Password Requirements: User Attitudes and Behaviors." Symposium on Usable Privacy and Security (SOUPS) 2010.
29. Toch, E., Cranshaw, J., Hankes Drielsma, P., Tsai, J.Y., Kelley, P.G., Cranor, L., Hong, J., and Sadeh, N. "Empirical Models of Privacy in Location Sharing." International Conference on Ubiquitous Computing (UbiComp) 2010.
30. Kelley, P.G., Cesca, L.J., Bresee, J., and Cranor, L.F. "Standardizing Privacy Notices: An Online Study of the Nutrition Label Approach." SIGCHI Conference on Human Factors in Computing Systems (CHI) 2010.
31. Kelley, P.G. "Conducting Usable Privacy & Security Studies with Amazon's Mechanical Turk." Usable Security Experiment Reports (USER) Workshop at Symposium on Usable Privacy and Security (SOUPS), 2010
32. B. Meeder, J. Tam, P.G. Kelley, and L.F. Cranor. "RT @IWantPrivacy: Widespread Violation of Privacy Settings in the Twitter Social Network" Web 2.0 Security & Privacy Workshop (W2SP), 2010.
33. Tsai, J., Kelley, P.G., and Cranor, L.F. "The Risk and Benefit Perceptions of Location-Sharing Technologies." Telecommunications Policy Research Conference (TPRC) 2009.
34. McDonald, A., Reeder, R., Kelley, P.G., and Cranor, L.F. "A Comparative Study of Online Privacy Policies and Formats." Privacy Enhancing Technologies Symposium (PETS) 2009.
35. Kelley, P.G., Bresee, J., Reeder, R., and Cranor, L.F. "Design of A Privacy Label." Symposium on Usable Privacy and Security (SOUPS) 2009.

36. Tsai, J., Kelley, P.G., Hanks Drielsma, P., Cranor, L.F., Hong, J., and Sadeh, N. "Who's Viewed You? The Impact of Feedback in a Mobile-location System." SIGCHI Conference on Human Factors in Computing Systems (CHI) 2009.
37. Ravichandran, R., Benisch, M., Kelley, P.G., and Sadeh, N. "Capturing Social Networking Privacy Preferences: Can Default Policies Help Alleviate Tradeoffs between Expressiveness and User Burden?" Privacy Enhancing Technologies Symposium (PETS) 2009.
38. Reeder R.W., Kelley, P.G., McDonald, A.M., and Cranor, L.F. "A User Study of the Expandable Grid Applied to P3P Policy Visualization." Workshop on Privacy in the Electronic Society (WPES). 2008.
39. Kelley, P.G., Hanks Drielsma, P., Sadeh, N., and Cranor L. "User Controllable Learning of Security and Privacy Policies." ACM Workshop on Artificial Intelligence and Security (AISeC) 2008.
40. Prabaker, M., Rao, J., Fette, I., Kelley, P.G., Cranor, L., Hong, J., and Sadeh, N. "Understanding and Capturing People's Privacy Policies in a People Finder Application." International Conference on Ubiquitous Computing (UbiComp) Workshop on Privacy, 2007.
41. DeBartolo, E., Bailey, M., Zaczek, M., Schriefer, T., Kelley, P.G., Ramaswamy, M., and Ryczko, N. "Traveling Engineering Activity Kits - Energy and the Environment." American Society for Engineering Education (ASEE) Conference, 2007.

## Magazine Publications

42. Ur, B., Kelley, P.G., Komanduri, S., Lee, J., Maass, M., Mazurek, M.L., Passaro, T., Shay, R., Vidas, T., Bauer, L., Christin, N., Cranor, L.F., Egelman, S., and Lopez, J. Helping Users Create Better Passwords. ;login:, The USENIX Magazine, Vol 37, No. 6, December 2012.

## Technical Reports

43. Mazurek, M.L., Komanduri, S., Vidas, T., Bauer, L., Christin, N., Cranor, L.F., Kelley, P.G. "Measuring password guessability for an entire university." CMU Tech Report: CMU-CyLab-13-013, October 2013.
44. Kelley, P.G., Cranor, L.F., Sadeh, N. "Privacy as Part of the App Decision-Making Process." CMU Tech Report: CMU-CyLab-13-003, February 2013.
45. Kelley, P.G., Komanduri, S., Mazurek, M.L., Shay, R., Vidas, T., Bauer, L., Christin, N., Cranor, L.F. "Guess again (and again and again): Measuring password strength by simulating password-cracking algorithms." CMU Tech Report: CMU-CyLab-11-008, August 2011.
46. Kelley, P.G., Benisch, M., Sadeh, N., and Cranor, L.F. "When are Users Comfortable Sharing Locations with Advertisers?" CMU Tech Report: CMU-CyLab-10-017, October 2010.
47. Benisch, M., Kelley, P.G., Sadeh, N., and Cranor, L.F. "Capturing Location-Privacy Preferences: Quantifying Accuracy and User-Burden Tradeoffs" CMU Tech Report: CMU-ISR-10-105, March 2010.
48. Kelley, P.G., Cesca, L., Bresee, J., Cranor, L.F. "Standardizing Privacy Notices: An Online Study of the Nutrition Label Approach." CyLab Tech Report: CMU-CyLab-09-014, November 2009.

49. Benisch, M., Kelley, P.G., Sadeh, N., Sandholm, T., Cranor, L., Hanks, P., Drielsma, P., and Tsai, J. "The Impact of Expressiveness on the Effectiveness of Privacy Mechanisms for Location Sharing." CMU Tech Report: CMU-ISR-08-141, December 2008.

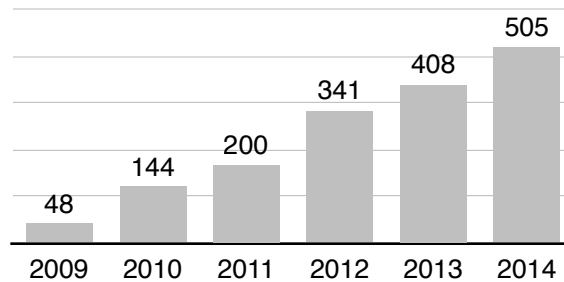
# CITATION INFORMATION

## Citations

Total:  
1682

2012-2014:  
1254

h-index: 23  
i10-index: 29



## Most cited publications

### *188 citations*

Understanding and capturing people's privacy policies in a mobile social networking application.

Personal and Ubiquitous Computing (PUC) 2009

### *128 citations*

Who's viewed you?: The impact of feedback in a mobile location-sharing application.

SIGCHI Conference on Human Factors in Computing Systems (CHI) 2009

### *107 citations*

A nutrition label for privacy

Symposium on Usable Privacy and Security (SOUPS) 2009

All citation data from Google Scholar as of November 2014.  
[http://scholar.google.com/citations?user=4\\_fN00YAAAAJ](http://scholar.google.com/citations?user=4_fN00YAAAAJ)

# STUDENTS

## PhD Students (current)

Steven Garcia, completed coursework  
Graphics, visualization

## MD Students (current)

Tomas Cordova  
Electronic health records, usability

## Masters Students (current)

Aaron Gonzalez  
Chat bots, news  
Ramon Lovato  
Ethics education, case studies  
Nathan Rackley  
Game development, illustration, prototyping  
April Suknot  
Game development, privacy, HCI

## Undergraduate Students (current)

Javier Chavez  
Android permissions, web development  
Tim Chavez  
Game development, scriptwriting  
Evan King  
Entrepreneurship  
Chris Ottino  
Facebook privacy, web development

## Masters Students (complete)

Amir Arbabshirani  
Supervised work on Watchtower

## Undergraduate Students (complete)

Fernando Serrano  
Supervised project work on anonymity  
Currently: MS at UNM  
Julian Lucero  
Supervised Thesis work on Synapse  
Robin Brewer (CMU)  
Supervised REU – friend grouping  
Currently: PhD student at Northwestern University  
Yael Mayer (CMU)  
Supervised REU – friend grouping

# AWARDS & HONORS

“Digital Privacy Notice Generator” Third place prize winner of the ONC Digital Privacy Notice Challenge. May 2014

“Of Passwords and People: Measuring the Effect of Password- Composition Policies.” CHI Best Paper Honorable Mention. CHI 2011.

“A Investigation into Facebook Friend Grouping.” Honorable Mention for Best Student Paper at INTERACT 2011 in Lisbon, Portugal.

“A “Nutrition Label” for Privacy” 1st Place, ACM Grand Finals Graduate Student Research Competition. 2010.

Our 2010 Standardizing Privacy Notices paper was selected for inclusion in the Privacy Papers for Policy Makers, Future of Privacy Forum publication.

“Designing A Privacy Label.” 1st Place, ACM SIGCHI Student Research Competition. 2009.

“Designing A Privacy Label.” Honorable Mention, NYU-poly Computer Security Awareness Week - Research Competition. 2009.

“Mitsubishi Electronic Research Lab Sensor Exploration.” With Danny Rashid. Honorary Award, IEEE InfoVis Contest. 2008.

# PATENTS

Awarded

*User-controllable learning of policies*

US 8423483 B2 / US20100036779

Application number	US 12/467,276
Publication date	Apr 16, 2013
Filing date	May 16, 2009

# GRANTS

## Funded

*EAGER: Privacy's Sociocultural Divide across American Youth*

PI: Patrick Gage Kelley (Co-PI: Myra Washington)

National Science Foundation, 10/01/2014 – 09/30/2016, \$242,832

*Understanding Privacy in Medical Mobile Apps*

PI: Patrick Gage Kelley

Google, Inc., unrestricted gift, October 2014, \$38,746

## Under-review

*Collaborative Research - Geospatial Privacy: Legal, Social and Ethical Implications for Users of Geocoded Data - Standard Research Grant*

PI: John Carr (Co-PIs: Patrick Kelley, Shannon Vallor, Francis Harvey)

National Science Foundation, \$294,934

submitted: July 2014

*SaTC-EDU: EAGER: Collaborative: Choices - An interactive approach to creating ethics case studies*

PI: Patrick Gage Kelley (Co-PIs: Vanessa Svihla, Tim Castillo, Kenneth Pimple)

National Science Foundation, \$270,000

submitted: October 2014

# TEACHING STATEMENT

I have wanted to be a teacher since I was a child, making up worksheets and forcing them on my friends as we played after school. Both my parents are teachers: my mother taught fourth grade for decades until she retired and my father still teaches business at a local community college.

I have sought out teaching wherever I could and as long as I can remember. During my undergraduate work at the Rochester Institute of Technology (RIT), I co-taught a class with Professor Jessica Lieberman in the English Department, *City as Text*. This course, in 2004, had students “read” architecture, archived newspapers, the farmer’s market, public transportation, restaurant menus—that is, the city itself—as one would a piece of literature. The goal was to understand the context and structure of place as one would critically discuss the form of a novel, and to teach a more critical way of thinking about place and space. Personally, it shaped the way I would approach courses, using mixed methods and different viewpoints to challenge the students’ expectations of what a literature or CS course is.

This has informed my teaching process at teaching Computer Science, New Media Arts, and Journalism, at Carnegie Mellon and now at the University of New Mexico. This approach leads me to more consciously frame in-class discussions with the context and structure of society, the classroom, history, and the world we inhabit.

This is most evidenced in my recreation of CS 293, our department’s ethics requirement. While most Computer Science departments might write this course off as something that simply must be done for the sake of accreditation, the department to their benefit, has allowed me to rebuild the class. This approach has us reading the ACM (Association for Computing Machinery) Code of Ethics to covering issues that arise each semester based on current events. In the course we have covered the death of digital activist Aaron Swartz, NSA surveillance, the launch of the healthcare.gov website, net neutrality, #ferguson, and #gamergate.

However, bringing these developing events into the classroom, and working through discussions on what they mean to budding computer scientists is only a part of the challenge of teaching ethics. One section of the ACM Code of Ethics that often stands out to students is 2.7: “Improve public understanding of computing and its consequences.” The ACM sees it as a responsibility of all computing professionals to “share technical knowledge with the public by encouraging understanding of computing, including the impacts of computer systems and their limitations.” Our ethics class is a place to teach our students that with the knowledge they learn while at UNM, they must go out into the world and become educators themselves. Not just helping people: their friends, parents, co-workers, and loved ones fix their wireless routers, but helping them understand what net neutrality means for their current Comcast bill or what an attack on the Albuquerque Police Department (APD) website by Anonymous might do.

Decisions in framing, apply not only in an ethics course, but structure and context should be considered even in what we might consider a simple introductory programming class. This past fall I changed the structure of our CS 152 course, our most basic introduction to Java, into a combined lab/lecture class (a near-flipped classroom approach). I voluntarily took on a second section of the class so that I



could teach exclusively in our computer lab, which fit only 60 people. I made this decision because I believe students learning to program should spend their time actually programming, in front of a computer, able to run and test their code. In this way I was able to lecture as much as I needed to in any given class session and the rest of the time they were with their colleagues (as well as the TAs and myself) actually programming, working on labs and projects.

To me, there is no universal rule that says CS courses are better taught like other science and mathematics courses traditionally have been, a structured setting of one person standing in front of dozens or hundreds of others talking, scribbling at the white board, or reading off slides. In many ways I see computer science (and engineering broadly) as a hybrid between science and art. A studio art class would rarely, if ever, be taught as a lecture/practice, rather the students would be drawing, drafting, or designing while a professor walks around, instructing each of them individually, teaching techniques and customizing his advice to each student. While this format was a first attempt, the students seemed to be quite happy with the in-lab experience, and I had a much higher retention than we have seen in CS 152 in years.

There is still much work to do to bring the courses our students demand to UNM CS. I taught my first (true) hybrid arts/CS class this past spring (Info Vis and Computational Design), and am teaching an HCI/Mobile App development class this coming Spring. IVCD was modeled after a course I taught at Carnegie Mellon with Golan Levin, bringing Computer Science students in contact with artists, architects, designers, journalists, and a range of other majors.

I continue to work across all my courses to help students develop projects that aren't just coursework, but belong in a portfolio (such as a digital media installation or a published mobile app). This is something I believe each student graduating from UNM CS should have, a portfolio that showcases their ability: to code, to develop successful and useful programs, to document their code and their process, and to write essays that clearly articulate their ideas on how computing fits into society as well as their software design process.

No matter what the topic, whether literature, computer science, policy, HCI, privacy and security, ethics or journalism, I argue that the most important role of a professor is to teach students to think critically, to learn to intelligently question what they read and hear, and to pique their innate curiosity in any subject matter as they create work they can be proud of for years to come.

*A short note on MOOCs: I feel I would be remiss if I didn't mention the possibilities of scalable online education here. I believe I am not yet at the stage where I have taught any of my courses enough times to make this jump, however I have begun to create videos for CS 293, which are being used in our CS4All class and as I build a more complete video set, I am looking towards a "MOOC" for computer science ethics education. However there are currently hurdles regarding essay grading and having discussions with depth that I do not yet have solutions which meet my standards.*

## iDEA Teaching Scores (raw):

		Excellent Teacher	Excellent Course
Fall 2012	CS 251 – Intermediate Programming	4.7	4.5
Spring 2013	CS 293 – Social and Ethical Issues in Computing	4.7	4.6
Fall 2013	CS 152 – Intro to Programming §01	4.7	4.6
	CS 152 – Intro to Programming §02	4.8	4.7
	CS 293 – Social and Ethical Issues in Computing	4.5	3.9
Spring 2014	CS 491/591 – Info. Vis and Computational Design	4.8	4.6
	CS 293 – Social and Ethical Issues in Computing	5.0	4.7
Fall 2014	CS 293 – Social and Ethical Issues in Computing §01		
	CS 293 – Social and Ethical Issues in Computing §02		

## Selected iDEA comments:

### CS 491/591 – Info. Visualization and Computational Design

“Enjoyed the atmosphere of this class. Prof. Kelley is a great teacher, very passionate about his subject.”

“I had a great time and feel I learned a great deal. Thanks.”

“Has anyone really been far even as decided to use even go want to do look more like?”

### CS 293 – Social and Ethical Issues in Computing

“I expected a much lighter treatment of the material – however I felt it was a much more stimulating and thought provoking subject as presented by Prof Kelley.”

“Very interesting topics. I was much more engaged in this course than I thought I’d be. Great professor.”

“One of the best professors I have had. I look forward to taking a 300-level or 400-level course with Patrick.”

“Professor Kelley is more engaging than other CS professors. He has a way of making CS classes more interesting. I look forward to other classes with him”

“Love Patrick’s teaching style. By far my favorite teacher at UNM. I plan on designing my schedule around what he teaches. UNM should get more teachers like him.”

### **CS 152 – Introduction to Programming**

“I found the assignments Dr. Kelley gave allowed me to understand how my code was running even if it was breaking. He took extra time to help students learn concepts and let people branch out into more complicated coding and test the waters. I will try to take more courses with Dr. Kelley.”

“This course, how it was taught was fun and manageable. I was able to learn the fundamentals in a clear and concise way. Dr. Kelley really engaged us and taught the material effectively. I do not believe I would have understood and grasped the topics as well as I did if it was not for his approach. The combined lecture-lab class is the way to go for this course.”

“Awesome instructor. Kelley 4 LIFE.”

“He is an excellent teacher. We need more teachers like him in this field who can make the class more fun and interesting. He is kind, funny and an inspirational teacher. I am glad I took the beginning CS class with him. I am encouraged to take more CS classes because of his teaching style. He is very clear and organized. Even though it is a very hard class, the teacher made me love this class and stay focused in this field.”

“He really helped me to improve in this field and, although he helped by answering my questions he often made me find the answers myself!”

“Awesome teacher! Hard course work”

“The professor had more synthesis oriented tests as compared to previous year examples which were more application oriented. The projects given were more hands on rather than my past experiences where I mostly copied lines of code.”

# PROFESSIONAL ASPIRATIONS

A decade ago I was teaching my first class, cementing my love for teaching university students. I was beginning my time at the National Security Agency. I was counting credits to decide if my second bachelors should be in Math or Literature and Writing—the latter won out. I was starting to more intentionally engage with design thinking and I had still not yet heard of HCI. A decade ago I could not have said where I would be today, but I could have said: I want to be a professor.

A decade from now seems equally distant and unknowable. There are certainly obvious goals I could state: more grants, more publications, the beginning of a lineage of my students out in the world, tenure. But these seem prescriptive.

If I was allowed to drive:

## **Fewer papers, more meta-research, more scholarship.**

I should be sitting on things longer, putting more experiments in a “paper,” and publishing the papers in different formats (websites, multiple versions, interactive). I should be making more of the software, the experiment mechanisms, and the data public. I should be spending more time promoting and speaking on the work. I should be spending more time with others’ research (since there is too much of it), putting their often small pieces together, since they are not.

## **No “pipeline” of PhD students, more time spent with undergraduates.**

When you have a pipeline of PhD students, they are all fungible objects, you add a new one in when the last one shoots out. PhD students should be singular, notable, and rare individuals, not objectified research-bots. As I am convinced we have excellent undergraduates, I should spend the time pulling them into research and spending years designing, building, and publishing projects with them. This also more closely aligns with the mission of a flagship state university. This also fits with the idea of a “creative coding” lab which I have been discussing with IT.

## **Push harder on exploring other ways of “teaching.”**

While I already taught a pseudo-flipped CS 152, I think there are many further models and experiments with teaching that I should develop. From building out parts of CS 293 into a video series and using interactive cases online for both students and the community to conducting focused MOOC-based co-working labs, CS education has room to grow and I intend to play in that space.

## **Contribute more intentionally.**

I do not see service as a chore, I see it as a privilege and a responsibility. Something that we, as academics, should want to participate in to make our communities stronger, better understood, more inclusive and far reaching. I intend to keep up my high level of service and hopefully continue to focus the groups I participate in to benefit future generations of computer scientists, designers, and everyone who has to make UI/UX and privacy decisions.

*Science and technology multiply around us. To an increasing extent they dictate the languages in which we speak and think. Either we use those languages, or we remain mute.*

– J.G. Ballard

## External Service

### Leadership Roles

#### **ACM SIGCHI Executive Committee Adjunct Chair for Media+Brand**

Appointed member of the SIGCHI EC with a focus on communications, transparency, social media, and brand. Term from July 2013-May 2015.

#### **SOUPS 2015 Publicity Chair**

Refreshed the SOUPS website, managed publicity and social media.

### Workshops Organized

The Future of Networked Privacy: Challenges and Opportunities 2015

### Program Committees

Second Workshop on Privacy and Security in Online Social Media, PSOSM 2013

ACM CHI Conference on Human Factors in Computing Systems, CHI 2014

Workshop on Privacy in the Electronic Society, WPES 2014

World Wide Web Conference, WWW 2015

### Reviewing

#### *Conferences*

Symposium on Usable Privacy and Security

SOUPS 2014, 2015

ACM SIGCHI Conference on Human Factors in Computing Systems

CHI 2012, 2013, 2015

ACM International Joint Conference on Pervasive and Ubiquitous Computing

UbiComp 2011, 2013, 2014

ACM Conference on Computer-Supported Cooperative Work and Social Computing

CSCW 2013

ACM Conference on Designing Interactive Systems

DIS 2014

ACM Symposium on User Interface Software and Technology

UIST 2014

International Conference on Information Systems

ICIS 2013

World Wide Web Conference

WWW 2015

#### *Journals*

ACM Transactions on Computer-Human Interaction, ToCHI

IEEE Security & Privacy Magazine

Information Systems Research Journal, ISR

IET Information Security

IEEE Pervasive Computing

IEEE Industrial Electronics Magazine

## Additional Service

### **ABQid Team Mentor**

Worked with the first class of ABQid technology startups on privacy and HCI issues.

### **U.S. House of Representatives first annual STEM Challenge Judge**

Worked with Rep. Michelle Lujan Grisham (NM-01)'s office to encourage participation, define roles and judging for the first annual high school mobile app development/design challenge.

### **Attorney General of California Advisory Board Member**

Part of advisory group to Kamala D. Harris, Attorney General of California for her guidelines to application developers: Privacy on The Go, January 2013. [http://oag.ca.gov/system/files/attachments/press\\_releases/privacy\\_on\\_the\\_go.pdf](http://oag.ca.gov/system/files/attachments/press_releases/privacy_on_the_go.pdf)

### **SIGCHI HCI Policy Report Contributor**

Worked with the SIGCHI Adjunct Chair for Policy in their

### **CS4All**

Contributed to the CS4All class with the first of a forthcoming series of videos about technology ethics and privacy.

### **CivicHackDay**

Part of the organizing group for CivicTech(Hack)Day, a nationwide event to support programmers and activists to create tools/apps to improve government.

## **Service to UNM**

University Libraries Committee 2013-2016

CS Undergraduate Curriculum Committee 2013-

CS ABET Committee 2013-

CS Faculty Search 2013

SOE Farris Engineering Center Master Planning

SOE Academic Council 2014-2015