

# Aaron Massey

Assistant Professor of Software Engineering  
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## EDUCATION

PhD in Computer Science *Aug. 2012*

*North Carolina  
State University*

*Adviser:* Dr. Annie I. Antón

*Dissertation:* Legal Requirements Metrics for Compliance Analysis

*Description:* Researched computer privacy and security topics, including legal compliance in software and prevention of data breaches. Developed methods for improving traceability from legal and policy documents to software requirement specifications. Developed metrics and techniques for improving developer decision making in areas of legal compliance.

MS in Computer Science *May 2009*

*North Carolina  
State University*

Completed core course requirements and researched a method for evaluating the legal compliance of existing security and privacy software requirements.

BS in Computer Engineering *May 2003*

*Purdue University*

Studied computer network security with *Dr. Carla Brodley*. Created a Denial of Service (DoS) attack detector and analyzed how an Intrusion Detection System (IDS) can fail gracefully.

## EXPERIENCE

Assistant Professor *August 2015 to Present*

*University of  
Maryland,  
Baltimore County*

Conducted academic research in requirements engineering, security, privacy, and regulatory compliance in software systems. Taught IS/HCC 636: Systems Analysis and Design, Fall 2015 and Spring 2016.

Research Scientist *July 2014 to Present*

*Georgia Tech  
Research Institute*

Developed a privacy research strategy for the Internet of Things. Wrote and submitted research proposals for the Federal Networking and Information Technology Research and Development (NITRD) Program's National Privacy Research Strategy.

- Georgia Institute  
 of Technology
- Postdoctoral Fellow *Aug. 2012 to Present*  
 Established a requirements engineering research group in the School of Interactive Computing. Examined privacy policies using topic models. Extended legal requirements metrics for evaluating legal compliance in software engineering using natural language processing techniques.
- North Carolina  
 State University
- Graduate Research Assistant *May 2007 to May 2012*  
 Conducted research open source electronic health records systems and healthcare information technology standards. Analyzed the legal compliance of health records systems developed and maintained by the National Collaborative for Bio-Preparedness.
- Institute for  
 Defense Analysis  
 Alexandria, VA
- Information Technology Systems Division Intern *Summer 2010*  
 Designed and implemented a software prototype to manage software requirements as a part of the United States export control process for militarily critical technologies. Examined the evolution of information technology to support this software prototype.
- CERIAS  
 Purdue University
- Research Assistant to Dr. Eugene Spafford *Summer 2009*  
 Researched the implementation of legally-required auditing mechanisms in information systems at the Center for Education and Research in Information Assurance and Security (CERIAS). Designed a case study to investigate current industry practices in this research area. Implemented tool support to improve these legal compliance efforts.
- Cato Institute  
 Washington, DC
- Google Policy Fellowship *Summer 2008*  
 One of 12 students selected in North America for a Google Policy Fellowship (3% acceptance rate). Contributed to the Cato Institute's study of information technology policy balancing privacy, anonymity, security, and convenience in identification and authorization systems infrastructure.
- Advanced Micro  
 Devices  
 Austin, TX
- Embedded Linux Systems Engineer *Jun. 2003 to Aug. 2006*  
 Authored, debugged, and tested various Linux Device Drivers for the Alchemy MIPS and Geode x86 embedded processor group, including a dynamic power management driver which allowed for any device to be individually power managed automatically as a part of an overall system policy. Wrote initial object oriented SimNow models for parts of the Geode x86 embedded processor line.
- Advanced Micro  
 Devices  
 Austin, TX
- Co-Op Student Intern *Jan. 2001 to Aug. 2001*  
 Tested the AMD PowerNow! power management algorithm along with other candidate algorithms. Wrote Linux documentation for upcoming Linux projects. Programmed, debugged and tested BIOS code in x86 Assembly for customer reference motherboards.
- Siemens ICN  
 Boca Raton, FL
- Co-Op Student Intern *Fall 1999, Summer 2000*  
 Programmed an interface to a Knowledge Support Systems database in Visual Basic. Trained on the use and maintenance of a telephone relay switching system. Reviewed, tested and edited procedures for troubleshooting and upgrading telephone relay switching systems.

## PUBLICATIONS

### DISSERTATION

1. A. K. Massey, "Legal requirements metrics for compliance analysis," PhD thesis, North Carolina State University, 2012.

### PAPERS SUBMITTED AND UNDER REVIEW

1. A. K. Massey and R. L. Rutledge, "Automatic generation of intensity maps for ambiguity identification", *24th IEEE International Requirements Engineering Conference (RE)*, Beijing, China, 2016 (In Submission).

### BOOK CHAPTERS

1. A. K. Massey and T. D. Breaux, "Introduction to it privacy: a handbook for technologists", in. International Association of Privacy Professionals, Feb. 2014, ch. Interference.
2. A. K. Massey and A. I. Antón, "Information assurance and security ethics in complex systems: interdisciplinary perspectives", in, M. Dark, Ed. IGI Global, 2010, ch. Behavioral Advertising Ethics, p. 22.

### JOURNAL PAPERS

1. A. K. Massey, P. N. Otto, and A. I. Antón, "Evaluating Legal Implementation Readiness Decision-Making", *IEEE Transactions on Software Engineering*, vol. **41**, no. (6), pp. 545–564, Jun. 2015.
2. A. K. Massey, P. N. Otto, L. J. Hayward, and A. I. Antón, "Evaluating existing security and privacy requirements for legal compliance", *Requirements Engineering*, vol. **15**, pp. 119–137, 2010.

### CONFERENCE PAPERS

1. S. Saito, Y. Iimura, H. Tashiro, A. K. Massey, and A. I. Antón, "Visualizing the effects of requirements evolution", *38th International Conference on Software Engineering (ICSE)*, Austin, TX, May 2016.
2. A. K. Massey, R. L. Rutledge, and A. I. Antón, "Identifying and classifying ambiguity for regulatory requirements", *22nd IEEE International Requirements Engineering Conference (RE)*, Karlskrona, Sweden, pp. 83–92, 2014.
3. S. Saito, Y. Iimura, K. Takahashi, A. K. Massey, and A. I. Antón, "Tracking requirements evolution by using issue tickets: a case study of a document management and approval system", *36th International Conference on Software Engineering*, Hyderabad, India, pp. 245–254, 2014.
4. A. K. Massey, J. Eisenstein, A. I. Antón, and P. P. Swire, "Automated text mining for requirements analysis of policy documents", *21st IEEE International Requirements Engineering Conference (RE)*, Rio de Janeiro, Brazil, pp. 4–13, 2013.
5. P. Morrison, C. Holmgreen, A. Massey, and L. Williams, "Proposing regulatory-driven automated test suites", *Agile Conference (AGILE)*, Nashville, TN, pp. 11–21, 2013. **Best Paper Award.**

6. A. K. Massey, B. H. Smith, P. N. Otto, and A. I. Antón, "Assessing the accuracy of legal implementation readiness decisions", *19th IEEE International Requirements Engineering Conference (RE)*, Trento, Italy, pp. 207–216, Sep. 2011.

#### NON-TRADITIONAL PAPERS

1. A. I. Antón, A. K. Massey, R. L. Rutledge, and P. P. Swire, "The relationship of security and privacy for the internet of things", *7th Annual Privacy Law Scholars Conference*, Washington, DC, June 2014.
2. A. K. Massey, "Technical standards and privacy law", *9th Annual Privacy Law Scholars Conference*, Washington, DC, 2016.
3. — —, "Getting to october: why understanding technology is essential for privacy law", *Idaho Law Review: Special Issue on Privacy in the Age of Pervasive Surveillance*, vol. 51, no. (3), pp. 695–710, 2015.

#### WORKSHOP PAPERS

1. P. Morrison, C. Holmgreen, A. Massey, and L. Williams, "Proposing regulatory-driven automated test suites for electronic health record systems", *5th International Workshop on Software Engineering in Health Care (SEHC)*, San Francisco, CA, pp. 46–49, 2013.
2. A. K. Massey, P. N. Otto, and A. I. Antón, "Prioritizing legal requirements", *Second International Workshop on Requirements Engineering and Law (RELAW)*, Atlanta, GA, pp. 27–32, Sep. 2009.
3. A. K. Massey and A. I. Antón, "A requirements-based comparison of privacy taxonomies", *First International Workshop on Requirements Engineering and Law (RELAW)*, Barcelona, Spain, pp. 1–5, 2008.

#### TECH REPORTS

1. A. K. Massey and A. I. Antón, "Triage for legal requirements," North Carolina State University, Tech. Rep., 2010.

#### TEACHING EXPERIENCE

##### Instructor

*Fall 2015, Spring 2016*

*University of  
Maryland,  
Baltimore County*

Taught IS/HCC 636 Systems Analysis and Design. Coursework includes a semester-long group project, written system documentation, and individual quizzes and exams. This is a required course for both the IS and the HCC Master's degree programs.

##### Teaching and Learning in Higher Education

*Spring 2014*

*Georgia Institute  
of Technology*

Completed 14-week course on teaching at the college level. Coursework included course preparation and delivery for two class sessions, analysis of teaching methods and their effectiveness, classroom management, and understanding the student experience.

**Instructor***Fall 2013*

Supervised two students conducting independent research on requirements engineering. Responsibilities included introducing both students to current academic research, weekly discussions of academic papers, teaching academic writing and research skills, and grading a semester-long research project.

**Instructor***Spring 2013*

CS 4803-PPL / CS 8803-PPL – Privacy Technology, Policy and Law

Designed and taught a mixed undergraduate- and graduate-level course cross-listed in computer science, management, and international affairs and focused on privacy technologies and their impact on law and policy.

Co-Instructor: Annie I. Antón

**Instructor***Summer 2011*

*North Carolina  
State University*

CSC 216 – Programming Concepts in Java

Taught the second course in computer programming concepts for computer science majors as the instructor of record. Designed course materials including quizzes, exercises, two five-week long programming projects, exams, and study materials.

**Teaching Assistant***Spring 2010, Spring 2012*

CSC 591e / CSC 791e – Requirements Engineering

Supported curriculum planning, grading, and teaching of a graduate-level course in the computer science department on software requirements engineering.

**Teaching Assistant***Spring 2009, Spring 2011*

CSC 591e / CSC 791e – Privacy Technology, Policy and Law

Supported curriculum planning, grading, and teaching of a new graduate-level course in the computer science department on privacy technologies and their impact on law and policy.

**Guest Lecturer***Fall 2009 to Fall 2011*

CSC 510 – Software Engineering

Lectured for over ten separate class periods on topics including an Introduction to Software Engineering, Software Processes, Software Planning, Risk Management, Project Scheduling, Project Estimation, and Formal Methods.

**FUNDING PROPOSALS****Google Research Open Web of Things Expedition***21 Jan 2015*

Directly involved in crafting a proposal for \$500k in funding to perform security and privacy research on the Internet of Things. Proposal title: Developing Privacy Threat Models and Protection Primitives for the Internet of Things in the Context of Living Laboratories.

**HONORS AND AWARDS**

*Georgia Institute  
of Technology*

Thank-a-Teacher Award, Spring 2013

Best Research Paper Award, Agile2013

North Carolina  
State University

Google Policy Fellowship  
Outstanding Teaching Assistant, 2011  
Walter H. Wilkinson Graduate Research Ethics Fellowship  
IAPP 2010 Summit KPMG Scholarship

Purdue University

Fessenden-Trott Scholarship  
Dean's Engineering Scholarship  
Semester Honors: Fall 1998, Spring 1998, Fall 1999, and Fall 2001

Noblesville High  
School

National Merit Scholarship  
Two-time World Finalist, Odyssey of the Mind  
Ranatra Fusca Award Winner

## INVITED PRESENTATIONS

<i>Florence, Italy</i>	<p>International Conference on Software Engineering <span style="float: right;"><i>22 May 2015</i></span></p> <p>Invited to present my Transactions on Software Engineering paper titled "Evaluating Legal Implementation Readiness Decision-making" as a part of ICSE's journal-first research presentations.</p>
<i>Boise, ID</i>	<p>Idaho Law Review Symposium <span style="float: right;"><i>3 April 2015</i></span></p> <p>Will participate as a panelist on the "Surveillance in Cyberspace by Private Actors" panel. The theme of the symposium will be "Privacy in the Age of Pervasive Surveillance." My primary topic for discussion will be the ethics of modern advertising technologies.</p>
<i>Atlanta, GA</i>	<p>GVU Brown Bag Lecture Series <span style="float: right;"><i>20 Nov 2014</i></span></p> <p>Presented research on systematically analyzing policy documents for regulatory compliance. Discussion included an overview of compliance concerns in privacy policies, terms of service documents, and regulations.</p>
<i>West Lafayette, IN</i>	<p>Purdue Research Experiences for Undergraduates (REU) Program <span style="float: right;"><i>Summer 2012, 2013, and 2014</i></span></p> <p>Taught a two-day introductory course on research ethics for undergraduates interested in research. Provided specific examples of ethical dilemmas in information technology and facilitated discussion.</p>
<i>Pullman, WA</i>	<p>Washington State University <span style="float: right;"><i>17 April 2014</i></span></p> <p>Detailed research on how we build software that demonstrably complies with laws, regulations, and business policies. Presentation included an overview of legal requirements traceability, legal requirements ethics, and legal implementation readiness decisions for software engineers.</p>
<i>West Lafayette, IN</i>	<p>Purdue CERIAS Security Seminar <span style="float: right;"><i>27 March 2013</i></span></p> <p>Presented an overview of Regulatory Compliance Software Engineering. Discussed a particular research concern within that field: How can we help software engineers seeking to assess whether security and privacy requirements for EHR systems are legally compliant?</p>

<i>Washington, D.C.</i>	Privacy Law Scholars Conference Panel Moderator	<i>Summer 2012</i>
	Summarized Richard Warner and Robert H. Sloan's arguments in their paper Behavioral Advertising: From One-Sided Chicken to Informational Norms. Discussed recent trends in behavioral advertising technologies and their implications for the future. Moderated further discussion of the paper.	
<i>Berkeley, CA</i>	Privacy Law Scholars Conference Panel Moderator	<i>Summer 2011</i>
	Summarized Peter Swire's arguments in his paper Social Networks, Privacy, and Freedom of Association. Commented on potential implications of his conclusions. Moderated further discussion of the paper.	
<i>West Lafayette, IN</i>	Purdue IAS Information Ethics Workshop	<i>Spring 2010</i>
	Conducted a three hour workshop on the ethics of behavioral advertising. Produced discussion questions and classroom support material for teaching behavioral advertising ethics at the university level.	
<i>West Lafayette, IN</i>	Purdue CERIAS Symposium Panelist	<i>30–31 March 2010</i>
	Discussed information security ethics, with particular emphasis on ethical development of tools, protocols, and techniques, as a panelist at the CERIAS Symposium. Responded to questions from audience members and panelists.	

## SERVICE

<i>Program Chair</i>	International Workshop on Requirements Engineering and Law (RELAW), 2013, 2015, 2016	
<i>Program Committee</i>	International Requirements Engineering Conference, RE: Next! track, 2016 ESEM Short Papers and Posters Program Committee, 2016 International Conference on Trust, Security and Privacy in Computing and Communications, 2015, 2016 Workshop on Technical and Legal Aspects of Data Privacy and Security, 2015, 2016 Workshop on Advances in Online Notice and Choice for Privacy, 2014 Workshop on Hot Topics in Privacy Enhancing Technologies (HotPETs), 2014 Web 2.0 Security and Privacy Workshop (W2SP), 2014, 2015 International Workshop on Requirements Engineering and Law (RELAW), 2012, 2014	
<i>Reviewer Service</i>	ACM Computing Surveys, 2016 Informatics, 2015–2016 Journal of Software: Practice and Experience, 2015 IEEE Software 2014 Transactions on Software Engineering, 2014 Software and Systems Modeling, 2014 Computers and Security, 2012–2016 Requirements Engineering Journal, 2012–2014 International Conference on Requirements Engineering, 2009–2013 Privacy Enhancing Technologies Symposium, 2009 International World Wide Web Conference, 2009	
<i>Student Volunteer</i>	National Academy of Engineering Grand Challenges Summit, March 3–5, 2010. 16th International Requirements Engineering Conference, 2008.	

*Policy Research*

June 21, 2007 · Contributed to Dr. Antón's congressional testimony before the U.S. House of Representatives Ways & Means Subcommittee on Social Security regarding the protection of Social Security Numbers.

Dec. 10–11, 2007 · Contributed to Dr. Antón's presentation as a panelist at the Federal Trade Commission's workshop entitled "Security in Numbers: SSNs and ID Theft".

April 14, 2011 · Contributed to Dr. Antón's congressional testimony before the U.S. House of Representatives Ways and Means Subcommittee on Social Security concerning the Social Security Administration's role in verifying employment eligibility (E-Verify).

Nov. 12, 2014 · Contributed to Dr. Antón's testimony before the Privacy and Civil Liberties Oversight Board regarding privacy interests in the counterterrorism context and the impact of information technology on privacy.

*Mentor*

Ligon Adoption Mentoring Program at Ligon Middle School in Raleigh, NC.

## EXTRACURRICULAR ACTIVITIES

*Leadership*

Advisory Council for the Office of Postdoctoral Services, Georgia Tech  
Co-founder, NCSU Software Engineering Journal Club

*Professional Affiliations*

Member of The Privacy Place, since January 2006  
Member of the Institute for Electrical and Electronics Engineers (IEEE), since December 2006  
Member of the IEEE Computer Society, since 2014  
Member of the Association for Computing Machinery (ACM), since June 2007  
Member of the U.S. Public Policy Committee of the ACM (USACM), since June 2007  
Member of the International Association of Privacy Professionals, since March 2008

*Additional Activities*

Winner of Bruce Schneier's 2008 Movie Plot Threat competition.  
Former Site Admin for the official Gentoo Linux support forums.  
Active in the open source software community since 1999.  
Member of the Purdue Society of Professional Engineers Rube Goldberg team.

*Computer Skills*

Programming Languages: C, C++, Java, Python, Ruby, JavaScript, HTML, Bash, Z Shell, R, and MATLAB  
Operating Systems: Mac OS X, Linux (Gentoo, Red Hat, SuSE, Ubuntu and Debian), FreeBSD  
Architectures: x86, x86-64, MIPS, PowerPC  
Development Environments: vim, Eclipse, NetBeans

## REFERENCES

- Daniel Amyot*      Professor, School of Electrical Engineering and Computer Science  
University of Ottawa
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*phone* +1 613-562-5800 ext. 6947  
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*website* <http://www.site.uottawa.ca/~damyot/>
- Annie I. Antón*      Chair and Professor, School of Interactive Computing  
Georgia Institute of Technology  
Director, ThePrivacyPlace.org
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*website* <http://theprivacyplace.org>
- Eugene Spafford*      Professor, Department of Computer Science  
Purdue University  
Executive Director, CERIAS
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*email* [spaf@purdue.edu](mailto:spaf@purdue.edu)  
*website* <http://spaf.cerias.purdue.edu>
- Peter Swire*      Nancy J. and Lawrence P. Huang Professor, in the Law and Ethics  
Ernest Scheller, Jr. College of Business, Georgia Institute of Technology
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*email* [Peter.Swire@scheller.gatech.edu](mailto:Peter.Swire@scheller.gatech.edu)  
*website* <http://www.peterswire.net>
- Laurie Williams*      Acting Department Head and Professor, Department of Computer Science  
North Carolina State University
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*website* <http://collaboration.csc.ncsu.edu/laurie/>

April 8, 2016