Jeffrey A. Vaughan

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Research Interests My research aims to improve software reliability, security, and privacy by creating technology for specifying and enforcing expressive security policies. Particular areas of research include information flow, fine-grained and proof-carrying access control, automatic audit, and policy semantics.

Employment

University of California, Los Angeles
Postdoctoral Scholar Fall 2010–present
Researching security and programming languages, with an emphasis on mobile devices.

Harvard University, Center for Research on Computation and Society
Postdoctoral Fellow Fall 2009–Fall 2010
Researched "pay-as-you-go" techniques for information flow analysis.

University of Pennsylvania
Instructor Spring 2008 and 2009
Taught CIS 399–005: C♯ Programming, an undergraduate programming class focusing on program implementation using modern language features. Formulated curriculum, wrote and delivered all lectures, and designed and graded assignments.

Microsoft
Software Development Engineer Intern Summer 2004
Designed, implemented, and tested code for the MSBuild console logger, part of the .Net software developer kit. This tool was shipped to customers with Visual Studio 2005.

Sandia National Laboratories
Technical Intern Summer 2003
Performed error analysis of computer code that interprets material science experiments run on Sandia's Z accelerator. Ran magnetohydrodynamic simulations for Cornell's COBRA accelerator.

Cornell University Laboratory of Plasma Studies
Research Assistant 2000–2004
Investigated fundamental physics and biological imaging applications of x- and z-pinch formed plasmas. Designed and fabricated experimental apparatus for z-pinch experiments; designed and implemented image correction software for data analysis.

Red Cow Digital Corporation
Sole Proprietor 1997–2004
Developed a law office collections system, PayBack, used to manage more than $1 million annually. Computerized and sold Fannie Mae/Freddie Mac mortgage forms to clients in 21 states.

Education

University of Pennsylvania
Doctor of Philosophy, Computer and Information Science December 2009
Master of Science in Engineering, Computer and Information Science May 2006
Advised by Prof. Steve Zdancewic. Dissertation *Aura: Programming with Authorization and Audit.*

Cornell University
Bachelor of Science, Computer Science and Applied and Engineering Physics June 2004
Graduated Cum Laude and with departmental honors.

Publications

Inference of Expressive Declassification Policies. Jeffrey A. Vaughan and Stephen Chong. *IEEE Security and Privacy (Oakland)*, 2011.

Self-Identifying Sensor Data. Stephen Chong, Christian Skalka, and Jeffrey A. Vaughan. *IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, 2010.

Aura: A Programming Language for Authorization and Audit. Limin Jia, Jeffrey A. Vaughan, Karl Mazurak, Jianzhou Zhao, Luke Zarko, Joseph Schorr, and Steve Zdancewic. *International Conference on Functional Programming (ICFP)*, 2008.

Evidence-based Audit. Jeffrey A. Vaughan, Limin Jia, Karl Mazurak and Steve Zdancewic. *IEEE Computer Security Foundations (CSF)*, 2008.

A Cryptographic Decentralized Label Model. Jeffrey A. Vaughan and Steve Zdancewic. *IEEE Security and Privacy (Oakland)*, 2007.

Relational Lenses: A Language for Updatable Views. Aaron Bohannon, Jeffrey A. Vaughan, and Benjamin C. Pierce. *Principles of Database Systems (PODS)*, 2006.

Factors Affecting Energy Deposition and Expansion in Single Wire Low Current Experiments. Peter U. Duselis, Jeffrey A. Vaughan, and Bruce R. Kusse. *Physics of Plasmas 11,* 2004.

Research Advising

All students co-advised with Todd Millstein.

Nikhilesh Reddy, UCLA, Masters thesis: *ACPLib: App-Centric Security Policies on Unmodified Android*. Graduated summer 2011. Currently at Qualcomm.

Eric Griffis, UCLA, Undergraduate directed research: *The Taming of the View: Leveraging Views for Drop-in Performance Gains*. Graduated spring 2011. Currently a masters student working with Todd Millstein and myself on personal data vaults; coauthor on paper in submission.

Yixin Zhu, UCLA, Cross-disciplinary Scholars in Science and Technology intern from Xi'an Jiaotong University, China. Built privacy preserving ad libraries; coauthor on paper in submission.

Jiatong He, UCLA, High School Summer Research Program. Project: *Fling—Utilization of Application-Centric Permissions on the Android OS*, 2011.

Outreach

CENS Career Pathways Panelist (for high school and undergraduate students), UCLA, July 2011
Intel International Science and Engineering Fair Judge, Los Angeles, May 2011

Awards

Center for Teaching and Learning Certificate, U. Penn, 2009
Departmental Honors, Cornell Computer Science, 2004
Departmental Honors, Cornell Engineering Physics, 2004
Teaching Assistant Award, Cornell Computer Science, 2004
Eagle Scout, 2000