

Paul Pearce
Assistant Professor, Georgia Tech

CONTACT
INFORMATION

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RESEARCH
INTERESTS

My research brings empirical grounding and understanding to the study of global, hidden Internet security problems. My work has focused on both politically and economically motivated attacks, spanning censorship, cybercrime, and “advanced persistent threats.” In pursuit of these goals I have built Internet-scale measurement platforms and designed new empirical methods aimed at discovering complex and unseen adversarial behavior.

CONFERENCE
PUBLICATIONS

- [1] V. Guo Li, M. Dunn, D. McCoy, G. M. Voelker, S. Savage, **P. Pearce**, K. Levchenko, “Reading the Tea leaves: A Comparative Analysis of Threat Intelligence”, *28th USENIX Security Symposium (USENIX)*, Aug 2019
- [2] M. Rezaeirad, B. Farinholt, H. Dharmdasani, **P. Pearce**, K. Levchenko, D. McCoy, “Schrodingers RAT: Profiling the Stakeholders in the Remote Access Trojan Ecosystem”, *27th USENIX Security Symposium (USENIX)*, Aug 2018
- [3] **P. Pearce**, “Methods and Systems for Understanding Large-Scale Internet Threats”, *PhD Dissertation, University of California, Berkeley*, Aug 2018
- [4] **P. Pearce**, B. Jones, F. Li, R. Ensafi, N. Weaver, N. Feamster, V. Paxson, “Global Measurement of DNS Manipulation”, *26th USENIX Security Symposium (USENIX)*, Aug 2017
- [5] R. Singh, R. Nithyanand, S. Afroz, **P. Pearce**, M. C. Tschantz, P. Gill, V. Paxson, “Characterizing the Nature and Dynamics of Tor Exit Blocking”, *26th USENIX Security Symposium (USENIX)*, Aug 2017
- [6] **P. Pearce**, R. Ensafi, F. Li, N. Feamster, V. Paxson, “Augur: Internet-Wide Detection of Connectivity Disruptions”, *38th IEEE Symposium on Security and Privacy (Oakland)*, May 2017
- [7] B. Farinholt, M. Rezaeirad, **P. Pearce**, H. Dharmdasani, H. Yiny, S. Le Blond, D. McCoy, K. Levchenko, “To Catch a Ratter: Monitoring the Behavior of Amateur DarkComet RAT Operators in the Wild”, *38th IEEE Symposium on Security and Privacy (Oakland)*, May 2017
- [8] K. Thomas, E. Bursztein, C. Grier, G. Ho, N. Jagpal, A. Kapravelos, D. McCoy, A. Nappa, V. Paxson, **P. Pearce**, N. Provos, M. A. Rajab, “Ad Injection at Scale: Assessing Deceptive Advertisement Modifications”, *36th IEEE Symposium on Security and Privacy (Oakland)*, May 2015. **Distinguished Practical Paper**
- [9] **P. Pearce**, V. Dave, C. Grier, K. Levchenko, S. Guha, D. McCoy, V. Paxson, S. Savage, G. M. Voelker, “Characterizing Large-Scale Click Fraud in ZeroAccess”, *21st ACM Conference on Computer and Communications Security (CCS)*, Nov 2014
- [10] **P. Pearce**, C. Grier, V. Paxson, V. Dave, D. McCoy, G. M. Voelker, and S. Savage. “The ZeroAccess Auto-Clicking and Search-Hijacking Click Fraud Modules”, *Technical report, EECS Department, University of California, Berkeley*, Dec 2013
- [11] **P. Pearce**, G. Nunez, A. P. Felt, and D. Wagner, “AdDroid: Privilege Separation for Applications and Advertisers in Android”, *7th ACM Symposium on Information, Computer and Communications Security (ASIACCS)*, May 2012

- [12] B. Miller, **P. Pearce** and C. Grier, C. Kreibich, V. Paxson, “What’s Clicking What? Techniques and Innovations of Today’s Clickbots”, *8th Conference on Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA)*, Jul 2011
- [13] J. A. Colmenares, S. Bird, H. Cook, **P. Pearce**, D. Zhu, J. Shalf, K. Asanovic, and J. Kubiatowicz. “Resource Management in the Tessellation Manycore OS”, *USENIX Workshop on Hot Topics in Parallelism (HotPar)*, Jun 2010
- [14] K. Klues, B. Rhoden, D. Zhu, **P. Pearce**, E. Brewer, J. Kubiatowicz. “Abstractions for Scalable Operating Systems on Manycore Architectures”. Work-In-Progress Poster, *22nd ACM Symposium on Operating Systems Principles (SOSP)*, Oct 2009

INVITED JOURNAL
AND MAGAZINE
ARTICLES

- [15] **P. Pearce**, R. Ensafi, F. Li, N. Feamster, V. Paxson, “Towards Continual Measurement of Global Network-Level Censorship”, *IEEE Security & Privacy Magazine, Special Issue*, 2018
- [16] **P. Pearce**, B. Jones, F. Li, R. Ensafi, N. Weaver, N. Feamster, V. Paxson, “Global Measurement of DNS Manipulation”, *USENIX ;login.*, Winter 2017

SERVICE &
LEADERSHIP

- CCS Program Committee:** 26th Conf. on Computer and Comm. Security 2019
- RAID Program Committee:** 22nd Sym. on Research in Attacks, Intrusions and Defenses 2019
- WOOT Program Committee:** 13th USENIX Workshop on Offensive Technologies 2019
- PETS Program Committee:** 20th Privacy Enhancing Technologies Symposium 2019-2020
- PETS Program Committee:** 19th Privacy Enhancing Technologies Symposium 2018-2019
- PETS Program Committee:** 18th Privacy Enhancing Technologies Symposium 2017-2018
- USENIX Security PC Scribe:** 25th USENIX Security Symposium 2016
- Student Leader:** Computer Science GSI Conference Workshop Leader, UC Berkeley Aug 2015
- Graduate Admissions:** UC Berkeley 2014-2015
Reviewed applications for the security research area
- Graduate Admissions:** UC Berkeley 2013-2014
Reviewed applications for diversity
- Student Leader:** CS Graduate Student Association President, UC Berkeley 2013-2014
- Student Leader:** CS Graduate Student Association Officer, UC Berkeley 2010-2015
- Student Leader:** EECS Department Undergraduate Study Committee, UC Berkeley 2009-2011
- Student Leader:** Eta Kappa Nu Member and Officer, UC Berkeley 2008-2010
- Mentoring:** EECS Peers, UC Berkeley Fall 2013 - Fall 2015
Available as a drop-in mentor for graduate students in electrical engineering and computer science.

RESEARCH AND WORK EXPERIENCE	<p>Georgia Institute of Technology <i>Assistant Professor, School of Computer Science, College of Computing</i></p> <p>University of California Berkeley <i>Graduate Student Researcher with Vern Paxson</i></p> <p>Microsoft Research Silicon Valley <i>Research Intern with Yinglian Xie</i></p> <p>University of California Berkeley <i>Researcher with the Parallel Computing Lab</i></p> <p>University of California Berkeley <i>Undergraduate Researcher with Laurent El Ghaoui</i></p> <p>Chaffey Community College Institutional Services <i>Supplemental Instruction Leader</i></p> <p>Chaffey Community College Math Success Center <i>Instructional Assistant</i></p>	<p>Atlanta, GA 2019 - Present</p> <p>Berkeley, CA Aug 2010 - Aug 2018</p> <p>Mountain View, CA May 2012 - Aug 2012</p> <p>Berkeley, CA Jan 2009 - Jun 2010</p> <p>Berkeley, CA Jun 2008 - Dec 2008</p> <p>Rancho Cucamonga, CA Aug 2006 - Jun 2007</p> <p>Rancho Cucamonga, CA Dec 2005 - Jun 2007</p>
EDUCATION	<p>University of California, Berkeley PhD Candidate, Computer Science <i>Advised by Vern Paxson</i></p> <p>University of California, Berkeley Master of Science (MS), Computer Science <i>Advised by Vern Paxson and David Wagner</i></p> <p>University of California, Berkeley Bachelor of Science, Electrical Engineering and Computer Science Graduated with Highest Honors</p> <p>Chaffey and Mt San Antonio Community Colleges</p>	<p>May 2013 - Aug 2018</p> <p>Aug 2010 - May 2013</p> <p>Aug 2007 - Dec 2009</p> <p>Jan 2004 - Jun 2007</p>
HONORS AND DISTINCTIONS	<p>Distinguished Practical Paper, IEEE Symposium on Security and Privacy</p> <p>CS Graduate Student Association President</p> <p>EECS Distinguished GSI Award</p> <p>CS Graduate Student Association Faculty Liaison</p> <p>NSF Honorable Mention (Operating Systems & Middleware)</p> <p>GAANN Fellowship</p> <p>Eugene L. Lawler Prize</p> <p>Fong Family Scholarship</p> <p>Eta Kappa Nu Member and Officer</p> <p>AMATYC Student Mathematics League Award</p> <p>Jack White Engineering Physics Award</p> <p>Arthur E. & Gladys P. Flum Award</p> <p>1st Place, ProgFest Team Programming Competition</p> <p>1st Place, ACM Regional Programming Comp., Community College Div.</p>	<p>May 2015</p> <p>May 2013 - May 2014</p> <p>Apr 2014</p> <p>May 2012 - May 2013</p> <p>Apr 2011</p> <p>Aug 2010 - May 2011</p> <p>Jun 2010</p> <p>May 2009</p> <p>May 2008 - May 2010</p> <p>May 2007</p> <p>May 2006</p> <p>May 2006</p> <p>Feb 2006</p> <p>May 2005</p>

ACADEMIC TALKS
AND LECTURES

Dissertation: Methods and Systems for Understanding Large-Scale Internet Threats	University of California, Berkeley	May 2018
Methods and Systems for Understanding Large-Scale Internet Threats	University of Virginia (UVA)	Apr 2018
	University of Massachusetts, Amherst	Apr 2018
	Northeastern University (NEU)	Mar 2018
	University of North Carolina, Chapel Hill (UNC)	Mar 2018
	University of Maryland (UMD)	Mar 2018
	University of California, Santa Barbara (UCSB)	Mar 2018
	University of Chicago (UChicago)	Mar 2018
	New York University, Tandon School of Engineering (NYU)	Mar 2018
	Georgia Institute of Technology (Georgia Tech)	Feb 2018
	University of Wisconsin, Madison (UWM)	Feb 2018
	Carnegie Mellon University (CMU)	Feb 2018
Global Measurement of DNS Manipulation	University of Illinois at Urbana-Champaign ITI Seminar	Oct 2017
	Cloudflare Seminar	Sep 2017
	26th USENIX Security Symposium (USENIX)	Aug 2017
	University of Michigan Security Seminar	Jul 2017
Understanding Threat Intelligence	Berkeley EECS Annual Research Symposium (BEARS)	Feb 2016
Characterizing Large-Scale Click Fraud in ZeroAccess	Messaging, Malware and Mobile Anti-Abuse Working Group (M3AAWG)	Oct 2015
	21st ACM Conference on Computer and Communications Security (CCS)	Nov 2014
Monetizing ZeroAccess: Inside the ZA-hosted Click-fraud Malware	Google Abuse Summit	May 2014
	Microsoft Digital Crime Conference (DCC)	Mar 2014
Malware	Guest Lecture, CS161 Computer Security, UC Berkeley	Jan 2014
Internet Freedom	Guest Lecture, CS161 Computer Security, UC Berkeley	Apr 2013
AdDroid: Privilege Separation for Applications and Advertisers in Android	7th Symposium on Information, Computer and Communications Security (ASIACCS)	May 2012
What's Clicking What? Techniques and Innovations of Today's Clickbots	8th Conf. on Detection of Intrusions and Malware & Vuln. Assessment (DIMVA)	Jul 2012
Machine Structure (CS61C), 25 Lectures as Instructor	Undergraduate Course, UC Berkeley	Jun-Aug 2010

TEACHING
EXPERIENCE

Computer Security (CS161) Teaching Assistant	University of California Berkeley	Jan 2013 - May 2013 Berkeley, CA
	Managed two discussion sections per week. Generated new content for homeworks, projects, lectures, and exams.	
	<i>Student Evaluation Overall Teaching Effectiveness: 4.9/5.0</i>	
Outstanding EECS GSI Award		
Computer Security (CS61C) Instructor	University of California Berkeley	Jun 2010 - Aug 2010 Berkeley, CA

Responsibilities included all lectures, course content, and administrative matters for 100 students.
Student Evaluation Overall Teaching Effectiveness: 6.3/7.0

Machine Structures (CS61C) Teaching Assistant

May 2009 - Aug 2009

University of California Berkeley

Berkeley, CA

Managed four labs and one discussion section each week. Was responsible for a CPU design project, several homeworks, and two lectures.

Student Evaluation Overall Teaching Effectiveness: 4.8/5.0

OPEN-SOURCE
SOFTWARE

ZMap: Fast Internet-Wide Scanner

Co-Author and Co-Maintainer

<https://github.com/zmap/zmap>

ZDNS: Fast CLI Utility for Large-Scale DNS Lookups

Co-Author and Co-Maintainer

<https://github.com/zmap/zdns>