

Curriculum Vitae

Michael Donald Bailey
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Professional Preparation

2006 Ph.D. in Computer Science, University of Michigan, Ann Arbor, MI.
1995 M.S. in Computer Science, DePaul University, Chicago, IL.
1992 B.S. in Computer Science, University of Illinois, Urbana, IL.

Appointments

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN, ILLINOIS
Associate Professor, (2014 - Present)

My interests lie in developing deeper understandings of the security, performance, and availability of computing systems. My work seeks to both inform the development of these systems to address immediate, important societal problems as well as to fundamentally enhance our understanding of the sciences underlying computing subfields including computer systems organization, networking, and security and privacy. While my research philosophy values knowledge based both on reason as well as experience and I routinely make use of all forms of inference, my work is best described as empirical, and hence, inductive in nature.

UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN
Research Associate Professor, (2012 - 2014)
Assistant Research Scientist (2007 - 2012)
Adjunct Lecturer (Winter 2008, Winter 2010, Fall 2012)
Research Project Manager (2004 - 2007)

My responsibilities as research faculty include: selecting problems and conducting research, writing and presenting research results, advising students, teaching, grant writing and administration, and performing both external and internal service. Note, that while I served in the role as the primary thesis advisor for doctoral students, by university policy, research professors may only serve as sole advisor by special permission. As such, these students appear as co-advised below.

ARBOR NETWORKS, INC., ANN ARBOR, MICHIGAN
Director of Engineering (2001 - 2004)

Arbor Networks builds innovative availability solutions for companies whose success depends on highly available and fully optimized networks. Arbor Networks flagship product, Peakflow SP, is a distributed, non-intrusive, scalable availability solution that improves network uptime, performance, and security for Internet Service Providers, enterprises, and hosting providers. The impact of this product is profound—as of

Q3 2013, these tools monitor roughly 70 terabits per second (Tbps) of global Internet traffic, an estimated one third of the total, average, global Internet bandwidth.

As Director of Engineering I coordinated the actions of engineering managers, architects, engineers, and release engineering for Arbor's products. I oversaw design, implementation, documentation, and QA activities. I was responsible for evaluations, hiring, and budget activities (\$3M+) for a department of 30 people. As a director, routinely interfaced with product marketing, sales, HR, legal, and finance as well as performed deployment, operations, and sales engineering tasks for marquee customers. Major milestones included developing software engineering processes, building the QA team, growing the engineering team from 10-30, and the delivery (on-time) of three new software products and associated follow on releases.

DRAGONFLY WIRELESS, ANN ARBOR, MICHIGAN

Founder (2000 - 2001)

DragonFly Wireless Inc.'s vision was to provide a next generation mobile data optimization solution to support instantaneous access to all file types from any device over any network. The company employed mobile distributed file system techniques to enable enterprises to wirelessly transmit data to professionals and customers faster and more efficiently than existing alternatives.

The company employed 18 people in two offices in the United States. Personal responsibilities included; chief architect of the Dragonfly's product, management of the implementation team, raising institutional and private investment, coordinating implementation and deployment for BETA customers, and supporting sales in their efforts to market the Dragonfly product.

SIGMA6 DIGITAL ARTIST CONSORTIUM, DETROIT, MICHIGAN

Consultant (1997 - 2000)

As a consultant for a web systems organization, worked as the technical lead on numerous projects including, but not limited to: a business training web site for Ford (JavaScript and ASP), a "build your own website" CD for Buick (visual basic), a back end logo generation Servlet for GMAC (Java), and a web based document management system (cold fusion).

UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN

Graduate Student Research Assistant (1995 - 2000, 2004)

My thesis (completed in 2006), entitled "A Scalable Hybrid Architecture for Measuring, Tracking, and Characterizing Internet Threat Dynamics", proposed and evaluated an architecture consisting of lightweight and heavyweight honeypots for measuring Internet threats such as denial of service attacks, worms, and botnets.

ANDERSEN CONSULTING, CHICAGO, ILLINOIS

Intern (1995)

A primary programmer in the next generation of CSTaR's (Center for Strategic Technology Research) Internet Interactive World project that sought to provide a unique commercial environment on the Internet using Sun's new programming language, Java. Completed a working prototype by end of Internship.

DEPAUL UNIVERSITY, CHICAGO, ILLINOIS

Instructor (1994 - 1995)

Worked as an instructor for DePaul University teaching undergraduate programming classes. Responsibilities included preparing and delivering lectures, coordinating GSI activities, developing and administering exams, and assigning student grades.

AMOCO CORPORATION, CHICAGO, ILLINOIS

Programmer/Analyst (1993 - 1994)

Programmer (1992 - 1993)

Completed individual and team projects to meet client specifications for a variety of new software systems. Each project consisted of defining client needs, producing program specifications, developing test plans, coding, testing, and documentation.

Synergistic Activities

As an associate professor I perform a variety of activities focused on improving the security and availability of complex distributed systems. In addition to traditional research products (i.e., publications), my research attempts to provide tools and data that make a substantive impact on the operations of today's networks. For example:

- As part of the DHS PREDICT project, our Virtual Center for Network and Security Data provides network and security researchers with valuable datasets for evaluation of new techniques and methods. We have made over 37TB of netflow data and 87 TB network telescope data available in anonymized form to security researchers.
- The Internet Motion Sensor (IMS) project was a network of distributed sensors that provides the capability to quickly and accurately characterize emerging threats like bots and worms. At its peak IMS consisted of more than 60 distinct monitored blocks at over 25 organizations across the Internet and was used actively used by Internet Service Providers as an early warning system for brewing security attacks.
- In our project entitled Detecting and Dismantling Botnet Command and Control Infrastructure using Behavioral Profilers and Bot Informants we are developing and deploying a system to detect and dismantle botnets. This software is deployed at the United States Computer Emergency Response Team (US-CERT) where this software helps protect 14 government agencies and networks. Furthermore, we are currently engaged in a technology transfer of this work to state and local governments through a pilot at the city of Seattle, WA.
- I am member of the "Menlo Report" working group. The "Menlo Report" is a community document, inspired by the Belmont Report, that seeks to provide a framework for ethical guidelines for computer and information security research. As a member of the Menlo working group I have been involved in a wide range of activities on this project including: writing, facilitating, marketing, and evaluating the report. Further, along with my colleagues, I have begun building tools, such as the ethical impact assessment (EIA), that can be used to help computer science researchers evaluate the ethical impact of their work.

Funding Activities

PI, co-PI, or Key personnel for numerous **awarded** grants:

- "Trustworthy and Secure Cyber Plexus" - National Research Foundation (Singapore), 9/15/2017 to 9/14/2022, \$15,000,000 (Singapore), David Nicol (PI), Michael Bailey (Key Personel), University of Illinois
- "Pre-Positioned Cyber Threats"- Department of Homeland Security,HSHQDC-16-A-B0010, 8/11/2017 to 2/10/2020, \$640,000, Michael Bailey (PI), University of Illinois (\$240,000); Angelos Stravrou (co-PI), Kryptowire, LLC.

- “Information Marketplace for Policy and Analysis of Cyber-risk and Trust (IMPACT) Ethics Decisions Support Research” - Department of Homeland Security, HSHQDC-16-A-B0010, 02/16/2017 to 02/15/2018, \$141,955, Michael Bailey (PI), University of Illinois (\$141,955)
- “Google Security Privacy and Anti-abuse applied research reward” - Google, Inc., Gift, 08/25/2016, \$100,000, Michael Bailey (PI), University of Illinois (\$100,000)
- “Understanding and Improving the Cybersecurity Posture for Manufacturers” - Department of Homeland Security, 2015-ST-061-CIRC01-02 (Modification 1), Michael Bailey (PI), David M. Nicol (co-PI), Randall Sandone (co-PI), 07/28/2016 to 07/27/2018, \$200,000, University of Illinois (\$200,000)
- “Cyber Resilient Energy Delivery Consortium (CREDC)” - Department of Energy, DE-OE0000780, 10/01/2015 to 9/30/2020, \$28,099,258, University of Illinois, Massachusetts Institute of Technology, Arizona State University, Dartmouth College, Oregon State University, Rutgers, Tenn State University, University of Houston, Washington State University, Argonne National Laboratory, Pacific Northwest National Laboratory; Michael Bailey (Key Personnel), University of Illinois
- “PREDICT Illinois” - Packet Clearing House, 9/11/2015 to 8/30/2016, \$141,689, Michael Bailey (PI), University of Illinois (\$141,689)
- “Enhancing Undergraduate Security Education” - Intel Corporation, Gift, 05/01/15, \$25,000, Michael Bailey (PI), University of Illinois (\$25,000)
- “TWC: TTP Option: Large: Collaborative: Internet-Wide Vulnerability Measurement, Assessment, and Notification” - National Science Foundation, CNS 1518741, 09/01/15 to 08/31/20, \$2,588,247, J. Alex Halderman (PI), University of Michigan; Vern Paxson, International Computer Science Institute; Michael Bailey (co-PI), University of Illinois (\$600,000)
- “TWC SBE: TTP Option: Medium: Collaborative: EPICA: Empowering People to Overcome Information Controls and Attacks” - National Science Foundation, CNS 1505790, 8/1/2014 to 7/31/2017, \$1,250,010, Wenke Lee (PI), Nicholas G Feamster, Hans K Klein, Hongyuan Zha, Georgia Institute of Technology; Marshini Chetty (co-PI), University of Maryland College Park; Michael Bailey (co-PI), University of Illinois (\$225,000)
- “A Next Generation Repository for Sharing Sensitive Network and Security Data.” - Department of the Air Force, FA8750-12-2-0314, 8/1/2012 to 7/31/2017, \$2,148,721, Michael Bailey (PI), University of Michigan (\$2,148,721)
- “EAGER: Understanding the Scope and Impact of Internet Information Manipulation” - National Science Foundation, CNS 1255153, 9/1/2012 to 8/31/2013, \$196,434, Michael Bailey (PI), J Alex Halderman (co-PI), University of Michigan (\$196,434)
- “TYPE-1: Efficient Tracking, Logging, and Blocking of Accesses to Digital Objects” - Department of Homeland Security, FA8750-12-2-0235, 9/27/2012 to 9/26/2014, \$1,035,590, Fabian Monrose (PI), University of North Carolina at Chapel Hill; Michael Bailey (co-PI), University of Michigan (\$239,665)
- “Cloud Computing Security” - Beyster Foundation, 4/1/2011 to 6/30/2050, \$100,000, Michael Bailey (PI), University of Michigan
- “NeTS: Large: Collaborative Research: Measuring and Modeling the Dynamics of IPv4 Address Exhaustion” - National Science Foundation, CNS 1111699, 8/1/2011 to 7/31/2015, \$1,999,901, Michael Bailey (PI), Zhuoqing M Mao (co-PI), University of Michigan (\$1,199,901.00); Vern Paxson (co-PI), Mark Allman (co-PI), Christian Kreibich (co-PI), International Computer Science Institute
- “Virtual Center for Network and Security Data” - Department of Homeland Security, NBCHC080037, 3/1/2008 to 2/28/2012, \$2,241,741.00, Farnam Jahanian (PI), Michael Bailey (co-PI), University of Michigan

- “A preliminary investigation of naming in the IPv6 Internet” - VeriSign, 11/1/2010 to 12/31/2050, \$50,000, Farnam Jahanian (PI), Michael Bailey (Key personnel), University of Michigan
- “Dependable Systems and Networks Conference: Student Travel Support” - National Science Foundation, CNS 1042515, 6/1/2010 to 5/31/2011, \$12,500, Michael Bailey (PI), University of Michigan
- “Mission Assurance in Tomorrow’s IP-based Networks: New Models and Paradigms for addressing Advanced Persistent Threats” - The Boeing Company, 12/1/2010 to 11/30/2011, \$236,072, Farnam Jahanian (PI), Michael Bailey (co-PI), University of Michigan
- “Botnet Attribution and Removal: From Axioms to Theories to Practice” - MURI - Multidisciplinary University Research Initiative (DoD), N00014-09-1-1042, 7/1/2009 to 5/31/2012, \$4,408,105 Wenke Lee (PI), David Dagon (co-PI), Jon Giffin (co-PI), Nick Feamster (co-PI), Georgia Institute of Technology; Kang Shin (co-PI), Farnam Jahanian (co-PI), Michael Bailey (co-PI), University of Michigan (\$1,267,294); John Mitchell, Stanford (co-PI); Chris Kruegel (co-PI), Giovanni Vigna (co-PI), University of California at Santa Barbara
- “TC; Small: In-Cloud Security Services for Mobile Devices” - National Science Foundation, CNS 0916390, 9/1/2009 to 8/31/2012, \$450,000, Michael Bailey (PI), University of Michigan
- “In-Cloud Security Services for Mobile Devices” - Google, Inc., 7/01/2009 to 12/31/2050, \$65,000, Farnam Jahanian (PI), Michael Bailey (Key personnel), University of Michigan
- “New Frameworks for Detecting and Minimizing Information Leakage in Anonymized Network Data” - Department of Homeland Security, FA8750-08-2-0147, 3/25/2008 to 4/30/2011, \$928,682, Fabian Monroe (PI), Michael Reiter (co-PI), University of North Carolina at Chapel Hill; Farnam Jahanian (PI), Michael Bailey (co-PI), University of Michigan (\$146,644)
- “Collaborative Research: CT-L: CLEANSE: Cross-Layer Large-Scale Efficient Analysis of Network Activities to Secure the Internet” - National Science Foundation, CNS 0831174, 10/1/2008 to 9/30/2012, \$1,829,297, Wenke Lee (PI), Nick Feamster (co-PI), Jon Giffin (co-PI), Mustaque Ahamad (co-PI), Xiaoming Huo (co-PI), Georgia Institute of Technology; Michael Bailey (co-PI), University of Michigan (\$281,000); Michael Reiter (co-PI), Fabian Monroe (co-PI) University of North Carolina at Chapel Hill; Phil Porras (co-PI), Vinod Yegneswaran (co-PI) SRI International; Paul Vixie (co-PI) Internet Software Consortium
- “CRI-IAD: Collaborative Research: Enabling Security and Network Management Research for Future Networks” - National Science Foundation, CNS 0751116, 3/1/2008 to 2/28/2011, \$356,775, Zhuoqing Mao (PI), Jignesh Patel (co-PI), Manish Karir (co-PI), Michael Bailey (co-PI), University of Michigan
- “The Internet Motion Sensor Project” - Cisco, Inc., 06/01/2008 to 12/31/2050, \$38,354.68, Farnam Jahanian (PI), Michael Bailey (Key personnel), University of Michigan
- “Detecting and Dismantling Botnet Command and Control Infrastructure using Behavioral Profilers and Bot Informants” - Department of Homeland Security, NBCHC060090, 10/10/2006 to 7/30/2011, \$2,041,599, Farnam Jahanian (PI), Michael Bailey (co-PI), University of Michigan
- “Topology-Aware Internet Threat Detection Using Pervasive Darknets.” - National Science Foundation, CNS 0627445, 09/15/2006 to 08/31/2010, \$412,580, Farnam Jahanian (PI), Jignesh Patel (co-PI), Michael Bailey (Key personnel), University of Michigan
- “Multi-Tiered Distributed Indication, Warning and Defense System” - Intelligence Community Advanced Research and Development Activity (ARDA), NBCHC030104, 10/1/2003 to 3/31/2005, \$790,825, Farnam Jahanian (PI), Peter Chen (co-PI), Michael Bailey (Key personnel), University of Michigan
- “The Internet Motion Sensor Project” - Intel, 12/03/2004 to 12/02/2015, \$267,000, Farnam Jahanian (PI), Michael Bailey (Key personnel), University of Michigan

- “Virtual Center for Network and Security Data” - Department of Homeland Security, NBCHC040146, 8/1/2004 to 7/31/2007, \$1,256,068, Farnam Jahanian (PI), Michael Bailey (Key personnel), University of Michigan

Conference Publications

1. Yi Zhou, Deepak Kumar, Surya Bakshi, Joshua Mason, Andrew Miller, and Michael Bailey. Erays: Reverse Engineering Ethereum’s Opaque Smart Contracts. In 27th USENIX Security Symposium (USENIX Security ’18), Baltimore, MD, August 15-17, 2018. 524 submissions, 100 accepted (19.1%).
2. Deepak Kumar, Riccardo Paccagnella, Paul Murley, Eric Hennenfent, Joshua Mason, Adam Bates, and Michael Bailey. Skill Squatting Attacks on Amazon Alexa. In 27th USENIX Security Symposium (USENIX Security ’18), Baltimore, MD, August 15-17, 2018. 524 submissions, 100 accepted (19.1%).
3. Dave (Jing) Tian, Nolen Scaife, Deepak Kumar, Michael Bailey, Adam Bates, and Kevin R. B. Butler. “Plug & Pray” Today Understanding USB Insecurity in Versions 1 through C. In IEEE Security & Privacy (Oakland) 2018 (S&P ’18), San Francisco, California, May 21-23, 2018. 549 submissions, 49 accepted, 14 resubmissions accepted (11.5%).
4. Deepak Kumar, Zhengping Wang, Matthew Hyder, Joseph Dickinson, Joshua Mason, Michael Bailey, Gabrielle Beck, David Adrian, Zakir Durumeric, and J. Alex Halderman. Tracking Certificate Misissuance in the Wild. In IEEE Security & Privacy (Oakland) 2018 (S&P ’18), San Francisco, California, May 21-23, 2018. 549 submissions, 49 accepted, 14 resubmissions accepted (11.5%).
5. Manos Antonakakis, Tim April, Michael Bailey, Matt Bernhard, Elie Bursztein, Jaime Cochran, Zakir Durumeric, J. Alex Halderman, Luca Invernizzi, Michalis Kallitsis, Deepak Kumar, Chaz Lever, Zane Ma, Joshua Mason, Damian Menscher, Chad Seaman, Nick Sullivan, Kurt Thomas, Yi Zhou. Understanding the Mirai Botnet. In 26th USENIX Security Symposium (USENIX Security ’17), Vancouver, Canada, August 16-18, 2017. 522 submissions, 85 accepted (16.3%).
6. Deepak Kumar, Zane Ma, Zakir Durumeric, Ariana Mirian, Joshua Mason, Michael Bailey and J. Alex Halderman. Security Challenges in an Increasingly Tangled Web. In 26th International World Wide Web Conference (WWW ’17), Perth, Australia, April 3-7, 2017. 966 submitted, 164 accepted (17.0%).
7. Zakir Durumeric, Zane Ma, Drew Springall, Richard Barnes, Nick Sullivan, Elie Bursztein, Michael Bailey, J. Alex Halderman, and Vern Paxson. The Security Impact of HTTPS Interception. In the Network and Distributed System Security Symposium 2017 (NDSS ’17), San Diego, California, February 26 - March 1, 2017. 423 submitted, 68 accepted (16.1%).
8. Benjamin VanderSloot, Johanna Amann, Matthew Bernhard, Zakir Durumeric, Michael Bailey, and J. Alex Halderman. Towards a Complete View of the Certificate Ecosystem. In ACM Internet Measurement Conference 2016 (IMC ’16), Santa Monica, California, November 14-16, 2016. 182 submitted, 46 accepted (25.2%).
9. Zhuotao Liu, Hao Jin, Yih-Chun Hu, and Michael Bailey. MiddlePolice: Toward Enforcing Destination-Defined Policies in the Middle of the Internet. In Proceedings of 23rd ACM Conference on Computer and Communications Security (CCS ’16), Hofburg Palace, Vienna, Austria, October 24-28, 2016. 831 submitted, 137 accepted (16.5%).
10. Kurt Thomas, Rony Amira, Adi Ben-Yoash, Ari Berger, Ori Folger, Amir Hardon, Elie Bursztein, and Michael Bailey. The Abuse Sharing Economy: Understanding the Limits of Threat Exchanges. In 19th International Symposium on Research in Attacks, Intrusions and Defenses (RAID ’16), Evry, France, September 19-21, 2016. 81 submitted, 21 accepted (25.9%).

11. Frank Li, Zakir Durumeric, Jakub Czyz, Mohammad Karami, Damon McCoy, Stefan Savage, Michael Bailey, and Vern Paxson. You've Got Vulnerability: Exploring Effective Vulnerability Notifications. In 25th USENIX Security Symposium (USENIX Security '16), Austin, Texas, August 10-12, 2016. 463 submitted, 72 accepted (15.6%)
12. Matthew Tischer, Zakir Durumeric, Sam Foster, Sunny Duan, Alec Mori, Elie Bursztein, and Michael Bailey. Testing the Malicious USB Anecdote. In IEEE Security & Privacy (Oakland) 2016 (S&P '16), San Jose, California, May 23-25, 2016. 413 submitted, 55 accepted (13.3%)
13. Jakub J. Czyz, Matthew Luckie, Mark Allman, Michael Bailey. Dont Forget to Lock the Back Door! A Characterization of IPv6 Network Security Policy. In Proceedings of the 23rd Annual Network and Distributed System Security Symposium (NDSS '16), San Diego, California, February 21-24, 2016. 389 submitted, 60 accepted (15.4%)
14. Zakir Durumeric, David Adrian, Ariana Mirian, Kurt Thomas, Vijay Eranti, Nicolas Lidzborski, Elie Bursztein, Michael Bailey, J. Alex Halderman, and James Kasten. Neither Snow Nor Rain Nor MITM ... An Empirical Analysis of Mail Delivery Security. In Proceedings of the 2015 Internet Measurement Conference (IMC '15), Tokyo, Japan, October 28-30, 2015. 169 submitted, 44 accepted (26.0%) **IETF/IRTF Applied Networking Research Prize.**
15. Zakir Durumeric, David Adrian, Ariana Mirian, Michael Bailey, J. Alex Halderman. A Search Engine Backed by Internet-Wide Scanning. In Proceedings of 22nd ACM Conference on Computer and Communications Security (CCS '15), Denver, Colorado, October 12-16, 2015. 646 submitted, 128 accepted (19.8%)
16. Yang Liu, Armin Sarabi, Jing Zhang, Parinaz Naghizadeh Ardabili, Manish Karir, Michael Bailey, Mingyan Liu. Cloudy with a Chance of Breach: Forecasting Cyber Security Incidents. In Proceedings of the 24th USENIX Security Symposium (USENIX Security '15), Washington, DC, August 12 - 14, 2015. 426 submitted, 67 accepted (15.7%)
17. Seyed K. Fayaz, Yoshiaki Tobioka, Vyas Sekar, Michael Bailey. Flexible and Elastic DDoS Defense using Bohatei. In Proceedings of the 24th USENIX Security Symposium (USENIX Security '15), Washington, DC, August 12 - 14, 2015. 426 submitted, 67 accepted (15.7%)
18. Matthew Sargent, Jakub Czyz, Mark Allman, and Michael Bailey. On The Power and Limitations of Detecting Network Filtering via Passive Observation. In Proceedings of the 16th Passive and Active Measurement Conference (PAM '15), New York, New York, March 19 - 20, 2015. 100 submitted, 27 accepted (27.0%)
19. Zakir Durumeric, James Kasten, Frank Li, Nicolas Weaver, Vern Paxson, Michael Bailey, J. Alex Halderman, Jethro Beekman, Johanna Amann, and Mathias Payer. The Matter of Heartbleed. In Proceedings of the 14th ACM SIGCOMM Conference on Internet Measurement (IMC '14), Vancouver, BC, Canada, November 5-7, 2014. 188 submitted, 43 accepted (22.9%) **Best paper.**
20. Jakub Czyz, Michael Kallitsis, Manaf Gharaibeh, Christos Papadopoulos, Michael Bailey, and Manish Karir. Taming the 800 Pound Gorilla: The Rise and Decline of NTP DDoS Attacks. In Proceedings of the 14th ACM SIGCOMM Conference on Internet Measurement (IMC '14), Vancouver, BC, Canada, November 5-7, 2014. 188 submitted, 43 accepted (22.9%)
21. Zakir Durumeric, Michael Bailey, and J. Alex Halderman. An Internet-wide View of Internet-wide Scanning. In 23rd USENIX Security Symposium (USENIX Security '14), San Diego, California, August 20-22, 2014. 350 submitted, 67 accepted (19.1%)
22. Jakub Czyz, Mark Allman, Jing Zhang, Scott Iekel-Johnson, Eric Osterweil, and Michael Bailey. Measuring IPv6 Adoption. In ACM SIGCOMM 2014 Conference (SIGCOMM '14), Chicago, Illinois, August 17-22, 2014. 237 submitted, 45 accepted (19.0%)

23. Jing Zhang, Zakir Durumeric, Michael Bailey, Manish Karir, and Mingyan Liu. On the Mismanagement and Maliciousness of Networks. In Proceedings of the 21st Annual Network & Distributed System Security Symposium (NDSS '14), San Diego, California, USA, February 2013. 293 submitted, 55 accepted (18.8%)
24. Yunjing Xu, Michael Bailey, Brian Noble, and Farnam Jahanian. Small is Better: Avoiding Latency Traps in Virtualized Data Centers. In the Proceedings of the ACM Symposium on Cloud Computing 2013 (SOCC '13), Santa Clara, CA, October 1-3, 2013. 114 submitted, 23 accepted (20.2%)
25. Denis Bueno, Kevin Compton, Karem Sakallah, and Michael Bailey. Detecting Traditional Packers, Decisively. In Proceedings of the 16th International Symposium on Research in Attacks, Intrusions and Defenses (RAID '13), St. Lucia, October 2013. 95 submitted, 22 accepted (23.2%)
26. Jakub Czyz, Kyle Lady, Sam Miller, Michael Bailey, Michael Kallitsis, and Manish Karir. Understanding IPv6 Internet Background Radiation. In Proceedings of the 13th ACM SIGCOMM Conference on Internet Measurement (IMC '13), Barcelona, Spain, October 2013. 178 submitted, 42 accepted (23.6%)
27. Zakir Durumeric, James Kasten, Michael Bailey, and J. Alex Halderman. Security Analysis of HTTPS Usage and Certificate Ecosystem. In Proceedings of the 13th ACM SIGCOMM Conference on Internet Measurement (IMC '13), Barcelona, Spain, October 2013. 178 submitted, 42 accepted (23.6%)
28. Yunjing Xu, Zachary Musgrave, Brian Noble, and Michael Bailey. Bobtail: Avoiding Long Tails in the Cloud. In 10th USENIX Symposium on Networked Systems Design and Implementation (NSDI '13), Lombard, Illinois, USA, April 35, 2013. 171 submitted, 38 accepted (22.2%)
29. Jing Zhang, Ari Chivukula, Michael Bailey, Manish Karir, and Mingyan Liu. Characterization of Blacklists and Tainted Network Traffic. In Proceedings of the 14th Passive and Active Measurement Conference (PAM '13), Hong Kong, China, March 18 - 20, 2013. 74 submitted, 24 accepted (32.4%)
30. Andrew White, Srinivas Krishnan, Phillip Porras, Michael Bailey, and Fabian Monrose. Clear and Present Data: Opaque Traffic and its Security Implications for the Future. In Proceedings of the 20th Annual Network & Distributed System Security Symposium (NDSS '13), San Diego, California, USA, February 2013. 250 submitted, 47 accepted (18.8%)
31. Jing Zhang, Robin Berthier, William Rhee, Michael Bailey, Partha Pal, William Sanders and Farnam Jahanian. Safeguarding Academic Accounts and Resources with the University Credential Abuse Auditing System. In Proceedings of the 42nd Annual IEEE International Conference on Dependable Systems and Networks (DSN '12), Boston, Massachusetts, USA, June 25 - 28, 2012. 80 submitted, 24 accepted (30%)
32. Scott Coull, Fabian Monrose, and Michael Bailey. On Measuring the Similarity of Network Hosts: Pitfalls, New Metrics, and Empirical Analyses. In Proceedings of the 18th Annual Network & Distributed System Security Symposium (NDSS '11), San Diego, California, USA, February 2011. 139 submitted, 28 accepted (20%)
33. Eric Wustrow, Manish Karir, Michael Bailey, Farnam Jahanian, and Geoff Houston. Internet Background Radiation Revisited. In Proceedings of the 10th ACM SIGCOMM Conference on Internet Measurement (IMC '10), Melbourne, Australia, November 2010. 211 submitted, 47 accepted (22%)
34. Yunjing Xu, Michael Bailey, Eric Vander Weele, and Farnam Jahanian. CANVuS: Context-Aware Network Vulnerability Scanning. In Proceedings of the 13th International Symposium on Recent Advances in Intrusion Detection (RAID '10), Ottawa, Ontario, Canada, September 2010. 100 Submissions, 23 accepted (23%)
35. Sushant Sinha, Michael Bailey, and Farnam Jahanian. Improving SPAM Blacklisting through Dynamic Thresholding and Speculative Aggregation. In Proceedings of the 17th Annual Network & Distributed System Security Symposium (NDSS '10), San Diego, California, USA, February-March 2010. 156 submitted, 24 accepted (15.4%)

36. Xu Chen, Jon Andersen, Z. Morley Mao, Michael Bailey, and Jose Nazario. Towards an Understanding of Anti-Virtualization and Anti-Debugging Behavior in Modern Malware. In Proceedings of the 38th Annual IEEE International Conference on Dependable Systems and Networks (DSN '08), pages 177-186, Anchorage, Alaska, USA, June 2008. 260 submissions, 63 accepted (24%)
37. Michael Bailey, Jon Oberheide, Jon Andersen, Zhuoqing Morley Mao, Farnam Jahanian, and Jose Nazario. Automated Classification and Analysis of Internet Malware. In Proceedings of the 10th International Symposium on Recent Advances in Intrusion Detection (RAID '07), pages 178-197, Gold Coast, Australia, September 2007. 101 submissions, 16 accepted (16%)
38. Sushant Sinha, Michael Bailey, and Farnam Jahanian. Shedding Light on the Configuration of Dark Addresses. In Proceedings of the 14th Annual Network & Distributed System Security Symposium (NDSS '07), pages 125-139, San Diego, California, USA, February-March 2007. 119 submissions, 19 accepted (16%)
39. Evan Cooke, Michael Bailey, Farnam Jahanian, and Richard Mortier. The Dark Oracle: Perspective-Aware Unused and Unreachable Address Discovery. In Proceedings of the 3rd Symposium on Networked Systems Design & Implementation (NSDI '06), pages 101-114, San Jose, California, USA, May 2006. 110 submissions, 28 accepted (25%)
40. Michael Bailey, Evan Cooke, Farnam Jahanian, Niels Provos, Karl Rosaen, and David Watson. Data Reduction for the Scalable Automated Analysis of Distributed Darknet Traffic. In Proceedings of the 5th ACM SIGCOMM Conference on Internet Measurement (IMC '05), pages 239-252, Berkeley, California, USA, October 2005. 148 submissions, 36 accepted (24%)
41. Michael Bailey, Evan Cooke, Farnam Jahanian, and Jose Nazario. The Internet Motion Sensor - A Distributed Blackhole Monitoring System. In Proceedings of the 12th Annual Network & Distributed System Security Symposium (NDSS '05), pages 167-179, San Diego, California, USA, February 2005. 124 submissions, 16 accepted (13%)

Workshop Publications (refereed)

42. Ariana Mirian, Zane Ma, David Adrian, Matthew Fischer, Thasphon Chuenchujit, Tim Yardley, Robin Berthier, Josh Mason, Zakir Durumeric, J. Alex Halderman and Michael Bailey. An Internet-Wide View of ICS Devices. In 2016 Privacy, Security and Trust Conference, Auckland, New Zealand, December 2016.
43. Yang Liu, Jing Zhang, Armin Sarabi, Mingyan Liu, Manish Karir, Michael Bailey. Predicting Cyber Security Incidents Using Feature-Based Characterization of Network-Level Malicious Activities. In International Workshop on Security and Privacy Analytics (SPA 2015), San Antonio, TX, USA, March 2015.
44. Jing Zhang, Robin Berthier, William Rhee, Michael Bailey, Partha Pal, William Sanders, Farnam Jahanian. Learning From Early Attempts To Measure Information Security Performance. In Proceedings of the 5th Workshop on Cyber Security Experimentation and Test (CSET '12), Bellevue, WA, USA, August 2012.
45. Erin Kenneally, Michael Bailey, and David Dittrich. A Refined Ethical Impact Assessment Tool and a Case Study of its Application. In Workshop on Ethics in Computer Security Research (WECSR '12), Bonaire, Netherlands, 2012.
46. Yunjing Xu, Michael Bailey, Farnam Jahanian, Kaustubh Joshi, Matti Hiltunen, and Richard Schlichting. An Exploration of L2 Cache Covert Channels in Virtualized Environments. In ACM Cloud Computing Security Workshop (CCSW '11), Chicago, IL, USA, October 2011.

47. Kaustubh Nyalkalkar, Sushant Sinha, Michael Bailey, and Farnam Jahanian. A Comparative Study of Two Network-based Anomaly Detection Methods. In (mini-conference) The 30th IEEE International Conference on Computer Communications (INFOCOM '11), Shanghai, China, April 2011.
48. Erin Kenneally, Michael Bailey, and Douglas Maughan. A Framework for Understanding and Applying Ethical Principles in Network and Security Research. Workshop on Ethics in Computer Security Research (WECSR '10), Tenerife, Canary Islands, Spain, January 2010.
49. Jon Oberheide, Michael Bailey, and Farnam Jahanian. PolyPack: An Automated Online Packing Service for Optimal Antivirus Evasion. In 3rd USENIX Workshop on Offensive Technologies (WOOT '09), Montreal, Canada, August 2009.
50. Sushant Sinha, Michael Bailey, and Farnam Jahanian. One Size Does Not Fit All: 10 Years of Applying Context Aware Security. In Proceedings of the 2009 IEEE International Conference on Technologies for Homeland Security (HST '09), Waltham, Massachusetts, USA, May 2009.
51. Michael Bailey, Evan Cooke, Farnam Jahanian, Yunjing Xu, and Manish Karir. A Survey of Botnet Technology and Defenses. In Proceedings of the Cybersecurity Applications & Technology Conference For Homeland Security (CATCH '09), pages 299-304, Washington, District of Columbia, USA, March 2009.
52. Scott E. Coull, Fabian Monrose, Michael K. Reiter, and Michael D. Bailey. The Challenges of Effectively Anonymizing Network Data. In Proceedings of the Cybersecurity Applications & Technology Conference For Homeland Security (CATCH '09), pages 230-236, Washington, District of Columbia, USA, March 2009.
53. Sushant Sinha, Michael Bailey, and Farnam Jahanian. Shades of Grey: On the effectiveness of reputation based 'blacklists'. In 3rd International Conference on Malicious and Unwanted Software (Malware '08), October 7-8, 2008, Alexandria, VA, USA.
54. Evan Cooke, Michael Bailey, Z. Morley Mao, David Watson, Farnam Jahanian, and Danny McPherson. Toward Understanding Distributed Blackhole Placement. In Proceedings of the 2nd Workshop on Rapid Malcode (WORM '04), pages 54-64, Washington, District of Columbia, USA, October 2004.

Books, Chapters, Magazine Articles

55. Matthew Tischer, Zakir Durumeric, Elie Bursztein, Michael Bailey. The Danger of USB Drives. *IEEE Security and Privacy* 15(2):62-69, 2017.
56. Yunjing Xu, Zachary Musgrave, Brian Noble, Michael Bailey. Workload-Aware Provisioning in Public Clouds. *IEEE Internet Computing* 18(4):15-21, 2014.
57. Michael Bailey, David Dittrich, Erin Kenneally, Doug Maughan. The Menlo Report. *IEEE Security and Privacy* 10(2):71-75, 2012.
58. David Dittrich, Michael Bailey, Sven Dietrich. Building an Active Computer Security Ethics Community. *IEEE Security and Privacy*, 9(4):32-40, 2011.
59. Michael Bailey, Evan Cooke, Farnam Jahanian, David Watson, and Jose Nazario. The Blaster Worm: Then and Now. *IEEE Security and Privacy*, 3(4):26-31, 2005.

Other Manuscripts

60. Erin Kenneally and Michael Bailey. Cyber-security Research Ethics Dialogue & Strategy Workshop Report. ACM SIGCOMM Computer Communication Review (CCR). Volume 44 Issue 2, April 2014. Pages 76-79.
61. Dittrich, David and Kenneally, Erin and Bailey, Michael, Applying Ethical Principles to Information and Communication Technology Research: A Companion to the Menlo Report (October 8, 2013). Available at SSRN: <http://ssrn.com/abstract=2342036>
62. Jakub Czyz, Mark Allman, Jing Zhang, Scott Iekel-Johnson, Eric Osterweil, and Michael Bailey. Measuring IPv6 Adoption. Technical Report TR-13-004, International Computer Science Institute (ICSI), Berkeley, CA, USA, August 2013.
63. Michael Bailey and Craig Labovitz. Censorship and Co-option of the Internet Infrastructure. Technical Report CSE-TR-572-11, University of Michigan, Ann Arbor, MI, USA, July 2011.
64. David Dittrich, Michael Bailey, and Sven Dietrich. Have we Crossed the Line? The Growing Ethical Debate in Modern Computer Security Research. In (Poster at) Proceedings of the 16th ACM Conference on Computer and Communication Security (CCS '09), Chicago, IL, USA, November 2009. A longer version appears as:
 - (a) David Dittrich, Michael Bailey, and Sven Dietrich. Towards community standards for ethical behavior in computer security research. Technical Report 2009-01, Stevens Institute of Technology, Hoboken, NJ, USA, April 2009.
65. Michael Bailey, Evan Cooke, Farnam Jahanian, Andrew Myrick, and Sushant Sinha. Practical Darknet Measurement. In Proceedings of the 40th Annual Conference on Information Sciences and Systems (CISS '06), pages 1496-1501, Princeton, New Jersey, USA, March 2006. (Invited paper)
66. Michael Bailey, Evan Cooke, David Watson, Farnam Jahanian, and Niels Provos. A Hybrid Honey-pot Architecture for Scalable Network Monitoring. Technical Report CSE-TR-499-04, University of Michigan, Ann Arbor, Michigan, USA, October 2004.
67. Michael Bailey, Farnam Jahanian, G. Robert Malan, Jose Nazario, Dug Song, and Robert Stone. Measuring, Characterizing, and Tracking Internet Threat Dynamics. In Proceedings of the OpenSig 2003 Workshop (OpenSig '03), New York, New York, USA, October 2003. (Invited paper)

Patents

- United States Patent Application Serial No. 61/618,648 for METHODS, SYSTEMS, AND COMPUTER READABLE MEDIA FOR RAPID FILTERING OF OPAQUE DATA TRAFFIC
- United States Patent Application Serial No. 61/942,920 for NETWORK MALICIOUSNESS SUSCEPTIBILITY ANALYSIS AND RATING
- United States Patent Application Serial No. 62/026,349 for RATING NETWORK MALICIOUSNESS AND COMPARING NETWORK MALICIOUSNESS THROUGH SIMILARITY ANALYSES

Popular Press

- Jason Murdock. Google bulks up Gmail security by adding a warning to unencrypted emails. International Business Times, February, 2016.
- Joseph Cox. Email Encryption Is Broken. Motherboard, October 2015.

- Dan Goodin. Dont count on STARTTLS to automatically encrypt your sensitive e-mails. Ars Technica, October 2015.
- Brian Krebs. Whos Scanning Your Network? (A: Everyone). Krebs on Security, May 2015.
- Tom Simonite. Probing the whole Internet in under an hour for major security flaws. MIT Technology Review, March 2015.
- Charlotte Collins. Snapchat leaks approximately 98,000 pictures, videos. The Daily Illini, October 2014.
- Jimmy Nicholls. Heartbleed Researcher Disputes Attacks Timeline Reports. Computer Business Review, September 2014.
- Christine Des Garennes. Breaches of trust. The News-Gazette, September 2014.
- Wendy M. Grossman. Heartbleed Software Snafu: The Good, the Bad and the Ugly. Scientific American, April 2014.
- Nicole Perloth. Study Finds No Evidence of Heartbleed Attacks Before the Bug Was Exposed. The New York Times, April 2014.
- Joseph Stromberg. Take these 4 steps right now to protect yourself from the Heartbleed bug. Vox, April 2014.
- Brian T. Horowitz. Heartbleed Threat: How To Stress Test Web Sites And Connected Devices. CrucialCIO, April 2014.
- Sam Gringlas. Internet security flaw left University sites vulnerable. The Michigan Daily, April 2014.
- Tom Simonite. How to Steal Data from Your Neighbor in the Cloud. MIT Technology Review, November 2012.
- Carolyn Duffy Marsan. Launch event drives IPv6 traffic to all-time high. Network World, June 2012.
- Tom Simonite. Watching virus behaviour could keep PCs healthy. New Scientist, June 2007.
- Kevin Poulsen. Researchers probe Net's 'dark address space'. The Register, November 2001.

Presentations, Invited Talks, and Panels

- Whats the Use? Searching for Meaning in 20 Years of Security Research, BroCon 2017, Keynote Address, September 12, 2017, Chamapaign, IL
- Measuring, Modeling, and Predicting Internet Abuse, Purdue University, October 22, 2015, West Lafayette, IN
- Let's Get Ethical, Ethical, Panel on Research Ethics, 24th USENIX Security Symposium, August 13, 2015, Washington, D.C.
- Ethics in Security and Privacy Research, Panel, National Science Foundation Secure and Trustworthy Cyberspace (SaTC) Principal Investigators' Meeting, January 5th, 2015, Arlington, VA
- Ethics in Measurement, Panel, 2014 Internet Measurement Conference (IMC). November 6th, 2014, Vancouver, BC, Canada
- Panel, 12th Georgia Tech Cyber Security Summit (GT CSS), October 29th, 2014, Atlanta, GA

- Panel and discussion on differences, similarities and relationships between NSF projects and other organizations (e.g., higher education, government, private sector), 2013 NSF Cybersecurity Summit for Cyber-infrastructure and Large Facilities, Arlington, Virginia, October 1st, 2013.
- Conducting Research Using Data of Questionable Provenance, 6th Workshop on Cyber Security Experimentation and Test (CSET '13), Washington, D.C., August 12, 2013
- A Personal Reflection on the Past, Present, and Future of Internet Threats, Eta Kappa Nu (HKN), Beta Epsilon chapter, University of Michigan, April 1st, 2013
- A Personal Reflection on the Past, Present, and Future of Internet Threats, The Hong Kong University of Science and Technology, Hong Kong, Hong Kong, 18th March, 2013
- A Personal Reflection on the Past, Present, and Future of Internet Threats, The Chinese University of Hong Kong, Hong Kong, Hong Kong, March 22nd, 2013
- IPv6 Adoption and IPv6 Background Radiation, VeriSign Tech Talk, Reston, Virginia, Thursday February 21, 2013
- IPv6 Adoption, NANOG 57, Orlando, Florida, Tuesday, February 5, 2013
- The Need for Ethical Security Research or Why If We Don't Get our Act Together Soon, We Will All Be in Some Really Hot Water, Center For Applied Cybersecurity Research, Indiana University, September 6, 2012
- Internet Threat Evolution and Responses, Ministry of Internal Affairs and Communications (MIC) - Department of Homeland Security (DHS) Bilateral Meeting for Information Security, Tokyo, Japan, June 20, 2012
- The Need for Ethical Security Research or Why If We Don't Get our Act Together Soon, We Will All Be in Some Really Hot Water, Eurecom, Sophia Antipolis, France, May 9th, 2012
- A Personal Reflection on the Past, Present, and Future of Internet Threats, Horst Gortz Institute For It-Security, Ruhr-Universitt Bochum, Germany, 7th May, 2012
- A Personal Reflection on the Past, Present, and Future of Internet Threats, Case Western Reserve University, Cleveland, Ohio, March 27th, 2012
- What Researchers Want, Workshop on Security at the Cyberborder, Indianapolis, Indiana, February 22nd-23rd, 2012
- Menlo Report Panel: Ethical Principles Guiding Information and Communication Technology Research, The 27th Annual Computer Security Applications Conference (ACSAC), Orlando, Florida, December 7th, 2011
- Malware, Botnets, and Beyond, Verisign, April 20, 2011
- Malware, Botnets, and Beyond, ITI Trust and Security Seminar (TSS), University of Illinois-Urbana, April 14, 2011
- Workshop on Cyber Security Data for Experimentation (CSDE), Arlington, Virginia, Friday, August 27, 2010
- The Public Regional Information Security Event Management (PRISEM) Project, Electronic Crimes Task Force, San Francisco, California, May 26, 2010
- 1.0.0.0/8, NANOG 49, San Francisco, California, June 13-16, 2010

- Regional Botnet Detection, ISP Security Track, NANOG 49, San Francisco, California, June 13-16, 2010
- Ethics in Networking and Security Research: Have We Gone Too Far? The 17th Annual Network and Distributed System Security Symposium (NDSS '10), San Diego, California, March 2nd, 2010
- Botnets and Malware. Global Cyber Security Conference, Washington, DC, August 4-6, 2009
- Enterprise Testbeds. EU/US Summit Series on Cyber Trust: System Dependability & Security, Dublin, Ireland, November 15-16, 2006
- Using Hybrid Honeypots to Monitor Internet Threats. The Joint Information Security Workshop on Internet Monitor and Analysis (ISWIMA), Tokyo, Japan, August 8th, 2006.
- The Internet Motion Sensor: A Distributed Blackhole Monitoring System, Lockdown 2005, Madison, Wisconsin, July 15, 2005
- Tracking Global Threats with the Internet Motion Sensor, NANOG 32, Reston, Virginia, October 17-19, 2004
- The Internet Motion Sensor, ISP Security and NSP-SEC BOF VI at NANOG 31, San Francisco, California, May 23-25, 2004
- Measuring Global Worm Activity, ISP Security and NSP-SEC BOF V at NANOG 30, Miami, Florida, February 8-10, 2004
- Shining Light on Dark Address Space, NANOG 23, Oakland, California, October 21-23, 2001

External Service

- Board of Director service:
 - USENIX Association, 2016-2018
- Steering Committee service:
 - Network and Distributed System Security Symposium, 2015-2017
- Organizing Committee service:
 - 20th International Symposium on Research in Attacks, Intrusions and Defenses, previously known as Recent Advances in Intrusion Detection, (RAID '18) (program chair)
 - 26th USENIX Security Symposium (invited talks committee)
 - 20th International Symposium on Research in Attacks, Intrusions and Defenses, previously known as Recent Advances in Intrusion Detection, (RAID '17) (program co-chair)
 - 25th International World Wide Web Conference (WWW '16) (security area program co-chair)
 - 24th USENIX Security Symposium (invited talks committee)
 - 2014 USENIX Summit on Hot Topics in Security (HotSec '14) (program co-chair)
 - 2013 USENIX Summit on Hot Topics in Security (HotSec '13) (deputy program chair)
 - Cyber-security Research Ethics Dialog & Strategy (CREDS '13) (program co-chair)
 - Cyber-security Research Ethics Dialog & Strategy (CREDS '12) (program co-chair)
 - Third USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '10) (program chair)

- 40th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN '10) (finance chair)
- 22nd USENIX Security Symposium (invited talks chair)
- Program Committee service:
 - 40th IEEE Symposium on Security and Privacy (IEEE S&P '19)
 - 27th USENIX Security Symposium (USENIX Security '18)
 - 24th Annual Network & Distributed System Security Symposium (NDSS '18)
 - 26th USENIX Security Symposium (Usenix Security '17)
 - Usenix Enigma 2017
 - 19th International Symposium on Research in Attacks, Intrusions and Defenses, previously known as Recent Advances in Intrusion Detection, (RAID '16)
 - ACM HotSoS 2016
 - APWG eCrime Researchers Summit 2016 (eCrime 2016)
 - 25th USENIX Security Symposium (Usenix Security '16)
 - Usenix Enigma 2016
 - 22nd Annual Network & Distributed System Security Symposium (NDSS '15)
 - 36th IEEE Symposium on Security and Privacy (Oakland '15)
 - 2014 Internet Measurement Conference (IMC '14)
 - 44th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN '14)
 - 21st Annual Network & Distributed System Security Symposium (NDSS '14)
 - 7th USENIX Workshop on Offensive Technologies (WOOT '13)
 - 16th International Symposium on Research in Attacks, Intrusions and Defenses, previously known as Recent Advances in Intrusion Detection, (RAID '13)
 - 6th Workshop on Cyber Security Experimentation and Test (CSET '13)
 - 34th IEEE Symposium on Security and Privacy (Oakland '13)
 - 6th USENIX Workshop on Offensive Technologies (WOOT '12)
 - 2012 Workshop on Building Analysis Datasets and Gathering Experience Returns for Security (BADGERS '12)
 - 5th USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '12)
 - 15th International Symposium on Recent Advances in Intrusion Detection (RAID '12)
 - 3rd Workshop on Ethics in Computer Security Research (WECSR '12)
 - 33rd IEEE Symposium on Security and Privacy (Oakland '12)
 - 1st SysSec Workshop (SysSec '11)
 - 2011 European Workshop on System Security (Eurosec '11)
 - 4th USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '11)
 - 2nd Workshop on Ethics in Computer Security Research (WECSR '11)
 - 14th International Symposium on Recent Advances in Intrusion Detection (RAID '11)
 - 8th Conference on Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA '11)
 - 41st Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN '11)

- 32nd IEEE Symposium on Security and Privacy (Oakland '11)
- 7th Conference on Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA '10)
- 17th Annual Network and Distributed System Security Symposium (NDSS '10)
- 13th International Symposium on Recent Advances in Intrusion Detection (RAID '10)
- 40th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN '10)
- Workshop on Ethics in Computer Security Research (WECSR '10)
- 17th Annual Network and Distributed System Security Conference (NDSS '10)
- 12th International Symposium on Recent Advances in Intrusion Detection (RAID '09)
- Second USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '09)
- 11th International Symposium on Recent Advances in Intrusion Detection (RAID '08)
- First USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '08)
- Proceedings of the 5th ACM workshop on Rapid Malcode (WORM '07)
- First Workshop on Hot Topics in Understanding Botnets (HotBots '07)
- Proceedings of the 4th ACM workshop on Rapid Malcode (WORM '06)
- External reviewer for numerous journals, conferences, and workshops including:
 - 42nd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN '12)
 - ACM Transactions on Storage (TOS)
 - 16th ACM Conference on Computer and Communications Security (CCS '09)
 - IEEE Security and Privacy Magazine
 - Communications of the ACM (CACM)
 - IEEE Transactions on Networking (ToN)
 - ACM Transactions on Information and System Security (TISSEC)
 - 30th IEEE Symposium on Security & Privacy (Oakland '09)
 - 6th USENIX Symposium on Networked Systems Design and Implementation (NSDI '09)
 - Workshop: Research on Enterprise Networking (WREN '09)
 - 18th USENIX Security Symposium (Usenix Security '09)
 - 15th Annual Network and Distributed System Security Symposium (NDSS '08)
 - 15th Annual ACM Computer and Communications Security Conference (CCS '08)
 - 38th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN '08)
 - 37th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN '07)
 - 10th International Symposium on Recent Advances in Intrusion Detection (RAID '07)
 - 9th International Symposium on Recent Advances in Intrusion Detection (RAID '06)
 - Second Workshop on Hot Topics in System Dependability (HotDep '06)
 - 2006 Internet Measurement Conference (IMC '06)
- NSF review panelist for programs in my domain area (Panel names and dates omitted per NSF).
- Served on the ACM Task force on Human Subject Ethics in Research
- Served on the US Department of Homeland Security “Menlo Report” working group

Department, College, and University Service Assignments

Department

- University of Illinois, Computer Science, FAA (Fellowships, Assistantships and Admissions) committee, 2017-2018
- University of Illinois, Electrical and Computer Engineering, Public Relations Committee, 2017-2018
- University of Illinois, Electrical and Computer Engineering, Development and Alumni Relations Committee, 2017-2018
- University of Illinois, Coordinated Science Laboratory, CSL PhD Thesis Award Committee, 2018
- University of Illinois, Coordinated Science Laboratory, CSL Policy & Planning Committee, 2018-2020 (elected)
- University of Illinois, Electrical and Computer Engineering, Curriculum Committee, 2016-2017
- University of Illinois, Electrical and Computer Engineering, Public Relations Committee, 2016-2017
- University of Illinois, Electrical and Computer Engineering, Development and Alumni Relations Committee, 2016-2017
- University of Illinois, Coordinated Science Laboratory, CSL PhD Thesis Award Committee, 2017
- University of Illinois, Coordinated Science Laboratory, CSL Academic Professional Awards Committee, 2016
- University of Illinois, Electrical and Computer Engineering, Public Relations Committee, 2015-2016
- University of Illinois, Electrical and Computer Engineering, Development and Alumni Relations Committee, 2015-2016
- University of Illinois, Electrical and Computer Engineering, Faculty Search Committee, 2015-2016
- University of Illinois, Electrical and Computer Engineering, Distinguished Research Fellowship Committee, 2014-2015
- University of Illinois, Electrical and Computer Engineering, Graduate Recruitment Committee, 2014-2015
- University of Illinois, Electrical and Computer Engineering, Curriculum Committee, 2014-2015
- University of Michigan, Computer Science and Engineering, Graduate Admissions, 2012-2013
- University of Michigan, Computer Science and Engineering, DCO Faculty Liaison, 2007-2008

College

- University of Illinois, College of Engineering, Engineering-Computer Science Liaison, 2017-2018
- University of Illinois, College of Engineering, Engineering-Computer Science Liaison, 2016-2017
- University of Illinois, College of Engineering, Engineering-Computer Science Liaison, 2015-2016

University

- University of Illinois, IT Faculty Advisory Committee, 2015-2017
- University of Michigan, Information and Infrastructure Assurance Council, 2013-2014
- University of Michigan, University IT Council, 2013-2014

Honors and Awards

- University of Illinois, List of Teachers Ranked as Excellent by Their Students (Fall 2016, Spring 2016)
- University of Illinois, Engineering Council Award for Excellence in Advising, 2016
- IETF/IRTF Applied Networking Research Prize, 2015
- Best paper award, Internet Measurement Conference, 2014
- Elevated to Senior Member of ACM, 2013
- University of Michigan Research Faculty Recognition Award, 2012
- University of Michigan, College of Engineering Kenneth M. Reese Outstanding Research Scientist Award, 2011
- Elevated to Senior Member of IEEE, 2009

Chair Ph.D. Committee Service

- Zane Ma, Ph.D. in CS in 2020 from the University of Illinois (Anticipated)
- Deepak Kumar, Ph.D. in CS in 2021 from the University of Illinois (Anticipated)
- Seoung Kim, Ph.D. in CS in 2022 from the University of Illinois (Anticipated)
- Paul Murley, Ph.D. in CS in 2022 from the University of Illinois (Anticipated)
- Joshua Reynolds, Ph.D. in CS in 2022 from the University of Illinois (Anticipated)

Co-chair Ph.D. Committee Service ¹

- Jake Czyz, Ph.D. in CS in 2016 from the University of Michigan, placed at Quad Metrics, thesis entitled “A Brave New World: Studies on the Deployment and Security of the Emerging IPv6 Internet”
- Jing Zhang, Ph.D. in CS in 2015 from the University of Michigan, placed at Karst Peak Capital, thesis entitled “A Macroscopic Study of Network Security Threats at the Organizational Level”
- Yunjing Xu, Ph.D. in CS in 2013 from the University of Michigan, placed at Square, Inc., thesis entitled “Characterizing and Mitigating Virtual Machine Interference in Public Clouds”

¹At the University of Michigan, Research Associate Professors may only serve as sole chair by special arrangement.

Non-chair Ph.D. Committee Service

- Rakesh Kumar, Ph.D. in ECE in 2018 from the University of Illinois (anticipated)
- Hao Wu, Ph.D. in ECE in 2017 from the University of Illinois, placed at Rubrik, Inc.
- Zhuotao Liu, Ph.D. in ECE in 2017 from the University of Illinois, placed at MiddlePolice, Inc.
- Zachary Estrada, Ph.D. in ECE in 2017 from the University of Illinois, placed at Rose-Hulman Institute of Technology (Assistant Professor)
- Yacin Nadji, Ph.D. in CS in 2015 from Georgia Institute of Technology, placed at Georgia Institute of Technology (PostDoc)
- Xinyu Xing, Ph.D. in CS in 2015 from Georgia Institute of Technology, placed at Penn State University
- Andrew White, Ph.D. in CS in 2015 from the University of North Carolina at Chapel Hill, placed at Netflix
- Jason R Britt, Ph.D. in CS from the University of Alabama at Birmingham (Anticipated)
- Pierre-Antoine Vervier, Ph.D. in 2014 from EURECOM, placed at Symantec
- Kevin Snow, Ph.D. in CS in 2014 from the University of North Carolina at Chapel Hill, placed at UNC (Research Scientist)
- Davide Canali, Ph.D. in CS in 2014 from EURECOM, placed at Lastline, Inc.
- Matthew Knysz, Ph.D. in CS in 2012 from the University of Michigan, placed at LiveLead, Inc.
- Jon Oberheide, Ph.D. in CS in 2011 from the University of Michigan, placed at Duo Security
- Yuanyuan Zeng, Ph.D. in CS in 2011 from the University of Michigan, placed at Perimeter eSecurity
- Xu (Simon) Chen, Ph.D. in CS in 2010 from the University of Michigan, placed at AT&T
- Sushant Sinha, Ph.D. in CS in 2009 from the University of Michigan, placed at Yahoo, India

Postdoc Students Supervised

- Mohammad Amin Kharraz, Ph.D. in CS in 2017 from the Northeastern University, Postdoctoral Research Associate (100%), 2018-present

Masters Students Supervised

- Kaishen Wang, MS in CS in 2018 from the University of Illinois (Anticipated)
- Suyup Kim, MS in CS in 2018 from the University of Illinois (Anticipated)
- Yi Zhou, MS in CS in 2018 from the University of Illinois (Anticipated)
- Eric Clark, MS in ECE in 2018 from the University of Illinois (Anticipated)
- Siddharth Murali, MS in CS in 2018 from the University of Illinois (Anticipated)
- Zhengping Wang, MS in ECE in 2018 from the University of Illinois, placed at Google, thesis entitled "Tracking certificate misissuance in the wild"

- Seoung Kim, MS in CS in 2017 from the University of Illinois, placed at UIUC Ph.D. program, thesis entitled “Measuring Ethereum’s peer-to-peer network”
- Mika Latimer, MS in ECE in 2017 from the University of Illinois, placed at Microsoft, thesis entitled “Trace-weighted binary comparison for software update management”
- Alex Mitsdarfer, MS in ECE in 2017 from the University of Illinois, placed at Sandia National Labs, thesis entitled “Characterizing university network usage with active directory event logs”
- Thasphon Chuenchujit, MS in CS in 2016 from the University of Illinois, placed at Indeed, thesis entitled “Crafting The Ultimate Phishing Email: A Survey Of Phishing Literature”
- Mathew Tischer, MS in ECE in 2015 from the University of Illinois, placed at Microsoft, thesis entitled “Testing Malicious USB Anecdote”
- Kyle Lady, MS in CS in 2014 from the University of Michigan, placed at Duo Security, studied Security
- Kee Shen Quah, MS in CS in 2014 from the University of Michigan, placed at EMC, studied Security
- Zachary Musgrave, MS in CS in 2013 from the University of Michigan, placed at Yelp, studied Cloud Computing
- Sam Miller, MS in CS in 2013 from the University of Michigan, placed at Microsoft, studied IPv6 Adoption
- Yiwen Li, MS in CS in 2013 from the University of Michigan, placed at NYU (Ph.D. student), studied Phishing
- Kaustubh Nyalkalkar, MS in CS in 2012 from the University of Michigan, placed at Pontiflex, studied Anomaly Detection
- Oleg Krogius, MS in CS in 2010 from the University of Michigan, placed at Microsoft, studied Mobile Security
- Eric Vander Weele, MS in CS in 2010 from the University of Michigan, placed at Bloomberg, studied Botnet Detection and Mitigation
- Stephen Hufnagel, MS in CS in 2007 from the University of Michigan, placed at Microsoft, studied Botnet Detection and Mitigation
- Kayle Hinkle, MS in CS in 2007 from the University of Michigan, placed at Microsoft, studied Botnet Detection and Mitigation
- Gabriele Giaquinto, MS in CS in 2007 from the University of Michigan, placed at Microsoft, studied Botnet Detection and Mitigation
- Andrew Myrick, MS in CS in 2007 from the University of Michigan, placed at Apple, studied Botnet Detection and Mitigation
- Jon Andersen, MS in CS in 2007 from the University of Michigan, placed at Citrix, studied Malware Analysis
- Rushi Desai, MS in CS in 2005 from the University of Michigan, placed at Microsoft, studied Botnet Detection and Mitigation
- Karl Rosaen, MS in CS in 2005 from the University of Michigan, placed at Google, studied Botnet Detection and Mitigation

Undergraduate Students Supervised

- Anna Shabayev (Undergrad Hourly), BS in ECE in 2019 from the University of Illinois, studied Ethics
- Ian Klatzco (Undergrad Hourly), BS in ECE in 2018 from the University of Illinois, studied IoT
- Paul Emge (Undergrad Hourly), BS in ECE in 2018 from the University of Illinois, studied IoT
- Tyler Hansen (Undergrad Hourly), BS in ECE in 2017 from the University of Illinois, studied Fuzzing
- Bartosz Kosciarz (Undergrad Hourly), BS in ECE in 2017 from the University of Illinois, studied WWW
- Eric Hennenfent (Undergrad Hourly), BS in CS in 2018 from the University of Illinois, studied WWW
- Yi Zhou (Undergrad Hourly), BS in Math in 2017 from the University of Illinois, studied CENSYS
- Matthew Hyder (Undergrad Hourly), BS in CS in 2017 from the University of Illinois, studied TLS
- Joseph Dickinson (Undergrad Hourly), BS in ECE in 2018 from the University of Illinois, studied TLS
- Samuel Foster (Senior Thesis), BS in CS in 2015 from the University of Illinois, studied Social Engineering, placed at Veeva Systems
- Sunny Duan (Honors Project), BS in ECE from the University of Illinois (Anticipated), studied Social Engineering
- Troy Chmielecki (Individual Study in ECE), BS in ECE in 2015 from the University of Illinois, studied Social Engineering, placed at Apple
- John Terwilleger (Individual Study in ECE), BS in ECE in 2015 from the University of Illinois, studied Malware, placed at Geneca
- Alec Mori (Undergrad Hourly), BS in ECE in 2016 from the University of Illinois, studied Social Engineering, placed at Yelp
- Andrey Zaytsev (Undergrad Hourly), BS in CS from the University of Illinois (Anticipated), studied Social Engineering
- James Danielson, BS in CS in 2016 from the University of Michigan (Anticipated), studied Malware
- Henry Fanson, BS in CS in 2016 from the University of Michigan (Anticipated), studied Data Center Computing
- Miguel Sanchez, BS in CS in 2014 from the University of Michigan, studied Malware
- Saam Aghevli, BS in CS in 2014 from the University of Michigan, placed at Google, studied Information Manipulation
- Ben Mehne, BS in CS in 2014 from the University of Michigan, placed at UC Berkeley (Ph.D. student), studied IPv6 Adoption
- Christopher Jeakle, BS in CS in 2014 from the University of Michigan, placed at Microsoft, studied Captchas
- Ari Chivukula, BS in CS in 2013 from the University of Michigan, placed at Facebook, studied DNS-based Reputation
- Alex Robinson, BS in CS in 2013 from the University of Michigan, placed at Google, studied DNS-based Reputation

- Cheng Chen, BS in CS in 2013 from the University of Michigan, placed at Yelp, studied IPv6 Adoption
- Qingkun Li, BS in CS in 2012 from the University of Michigan, placed at UIUC (Masters student), studied IPv6 Adoption
- Kelsey M. Harris, BS in CS in 2011 from the University of Michigan, placed at MIT Lincoln Labs, studied Malware Analysis
- Vaibhav Mallya, BS in CS in 2010 from the University of Michigan, placed at Amazon, studied Mobile Security
- Mark Griffen, BS in CS in 2009 from the University of Michigan, placed at USAF, studied Botnet Detection and Mitigation

Teaching Experience

- ECE 422 / CS 461, Introduction to Computer Security, Spring 2018
- ECE 391, Computer Systems Engineering, Spring 2018
- ECE 391, Computer Systems Engineering, Fall 2017
- ECE 422 / CS 461, Introduction to Computer Security, Spring 2017, 161 Students (Q1 - 4.5, Q2 - 4.5)
- ECE 422 / CS 461, Introduction to Computer Security, Fall 2016, 165 Students (Q1 - 4.7, Q2 - 4.5)
- ECE 422 / CS 461, Introduction to Computer Security, Spring 2016, 148 Students (Q1 - 4.6, Q2 - 4.6)
- ECE 422 / CS 461, Introduction to Computer Security, Fall 2015, 154 Students (Q1 - 4.5, Q2 - 4.6)
- ECE 422 / CS 461, Introduction to Computer Security (ONL), Fall 2015, 11 Students (Q1 - 4.0, Q2 - 4.4)
- ECE 422 / CS 461, Introduction to Computer Security, Spring 2015, 134 Students (Q1 - 4.5, Q2 - 4.5)
- ECE 391, Computer Systems Engineering, Fall 2014, 138 Students (Q1 - 4.2, Q2 - 3.9) ²
- EECS 398, Introduction to Computer Security, Fall 2012, 112 Students (Q1 - 4.50, Q2 - 4.69) ³
- EECS 591, Distributed Systems, Winter 2010, 23 Students (Q1 - 4.05, Q2 - 4.25)
- EECS 591, Distributed Systems, Winter 2008, 19 Students (Q1 - 3.93, Q2 - 4.00)
- Various “guest lectures” including: EECS 591 - Distributed Systems (Winter 2003), EECS 489 - Computer Networks (Fall 2004, Winter 2005), EECS 496 - Professionalism and Ethics (Fall 2006), EECS 589 - Advanced Computer Networks (Fall 2006), EECS 388 - Introduction to Computer Security (Fall 2013)

²Q1 - Rate the Instructor’s Overall Teaching Effectiveness, Q2 - Rate the Overall Quality of this Course

³Q1 - Overall, this was an excellent course, Q2 - Overall, the instructor was an excellent teacher.

Collaborators

David Adrian (University of Michigan), Mark Allman (International Computer Science Institute), Johanna Amann (International Computer Science Institute), Rony Amira (Google), Parinaz Ardabili (University of Michigan), Jethro Beekman (University of California, Berkeley), Adi Ben-Yoash (Google), Ari Berger (Google), Denis Bueno (Sandia National Laboratories), Elie Bursztein (Google), Marshini Chetty (University of Maryland, College Park), Ari Chivukula (Facebook), Kevin Compton (University of Michigan), Jakub Czyz (QuadMetrics), David Dittrich (University of Washington, Tacoma), Sunny Duan (University of Illinois at Urbana-Champaign), Zakir Durumeric (University of Michigan) , Vijay Eranti (Google), Seyed Fayaz (Carnegie Mellon University), Nicholas Feamster (Princeton University), Ori Folger (Google), Sam Foster (Veeva Systems), Manaf Gharaibeh (Colorado State University), Alex Halderman (University of Michigan), Amir Hardon (Google), Scott Iekel-Johnson (Arbor Networks), Farnam Jahanian (Carnegie Mellon University), Michael Kallitsis (Merit Network), Mohammad Karami (George Mason University), Manish Karir (QuadMetrics), James Kasten (Google), Erin Kenneally (Department of Homeland Security), Hans Klein (Georgia Institute of Technology), Christian Kreibich (International Computer Science Institute), Srinivas Krishnan (Google), Kyle Lady (Duo), Wenke Lee (Georgia Institute of Technology), Frank Li (University of California, Berkeley), Nicolas Lidzborski (Google), Yang Liu (Harvard University), Mingyan Liu (University of Michigan), Matthew Luckie (University of Waikato), Zhuoqing Mao (University of Michigan), Damon McCoy (George Mason University), Sam Miller (Usermind), Ariana Mirian (University of California, San Diego), Fabian Monroe (University of North Carolina at Chapel Hill), Alec Mori (Yelp), Zachary Musgrave (Yelp), Brian Noble (University of Michigan), Eric Osterweil (Verisign), Christos Papadopoulos (Colorado State University), Vern Paxson (International Computer Science Institute, University of California, Berkeley), Mathias Payer (Purdue University), Phillip Porras (SRI International), Karem Sakallah (University of Michigan), Armin Sarabi (University of Michigan), Matthew Sargent (National Aeronautics and Space Administration), Stefan Savage (University of California, San Diego), Vyas Sekar (Carnegie Mellon University), Kurt Thomas (Google), Matthew Tischer (Microsoft), Yoshiaki Tobioka (NTT Communications) , Nicolas Weaver (International Computer Science Institute), Andrew White (Netflix), Yunjing Xu (Smyte), Hongyuan Zha (Georgia Institute of Technology), Jing Zhang (Karst Peak Capital)

Graduate Advisor

Farnam Jahanian (Carnegie Mellon University)

Thesis Advisor (3)

Jake Czyz (QuadMetrics), Yunjing Xu (Smyte), Jing Zhang (Karst Peak Capital)