Drew Davidson

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Research Interests

Security and privacy: mobile, embedded, cloud, network, web, internet of things.
Program analysis: static analysis, symbolic execution

Education

2016	PhD, Computer Science, University of Wisconsin-Madison Advisor: Somesh Jha Thesis: Enhancing Mobile Security and Privacy through App Splitting
2011	MS, Computer Science, University of Wisconsin
2008	BS, Computer Science *magna cum laude*, University of Arizona Advisor: Saumya Debray Thesis: SPADE: Semantically Preserving Abstract Decompiler Experiment

Honors and Awards

- Graduate Student Instructor Award, 2016
- Honored Instructor Award, 2014
- Outstanding Senior Award, 2008
- Outstanding Service Award, 2008

Funding

2017–Present	NSF SBIR Phase I, December 2016 Cycle **(Funding rate: 15%)** Principle Investigator, *Security Tools for the DevOps World* (Phase II Pending)

Academic Research Experience

2008–2016	**Research Assistant**, Advisor: Somesh Jha University of Wisconsin
2007–2008	**Undergraduate Research Assistant**, Advisor: Saumya Debray University of Arizona

Industry Research Experience

2016-Present	**Founding Engineer**, Tala Security
2011	**Research Intern**, Microsoft Research Privacy-Conscious Mobile Personalization. Research Mentor: Ben Livshits
2010	**Research Intern**, IBM T.J. Watson Whole-Network Infomration Flow Analysis. Research Mentor: Mihai Christodorescu
2009	**Research Intern**, SRI International Tools for Reverse Engineering Malware. Research Mentor: Vinod Yegneswaran

Peer-reviewed Publications

Drew Davidson, Vaibhav Rastogi, and Somesh Jha. Enhancing Android Security through App Splitting. In *EAI International Conference on Security and Privacy in Communication Networks (SecureComm)*, 2017. *acceptance rate: 29.5% (31/105)*

Drew Davidson, Yaohui Chen, Franklin George, Long Lu, and Somesh Jha. Secure Integration of Web Content and applications on Commodity Operating Systems. In *ACM Asia Conference on Computer and Communications Security (ASIACCS)*, 2017. *acceptance rate: 20.3% (73/359)*

Vaibhav Rastogi and **Drew Davidson** and Lorenzo De Carli and Somesh Jha and Patrick McDaniel. Cimplifier: Automatically Debloating Containers. In *Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, 2017

Drew Davidson, Benjamin Moench, Thomas Ristenpart, and Somesh Jha. Controlling uavs with sensor input spoofing attacks. In *USENIX Workshop on Offensive Technologies (WOOT)*, 2013

Drew Davidson, Matt Fredrikson, and Ben Livshits. MoRePriv: Mobile OS Support for Application Personalization and Privacy. In *Annual Computer Security Applications Conference (ACSAC)*, 2014. *acceptance rate: 19.9% (47/236)*

Drew Davidson, Ben Moench, Somesh Jha, and Thomas Ristenpart. Fie on firmware. In *USENIX Security Symposium*, 2013. *acceptance rate: 16.2% (45/277)*

Matthew Fredrikson, **Drew Davidson**, Somesh Jha, and Benjamin Livshits. Towards enforceable data-driven privacy policies. In *Workshop on Web 2.0 Security and Privacy (W2SP)*, 2011

Roberto Paleari, Lorenzo Martignoni, Emanuele Passerini, **Drew Davidson**, Matt Fredrikson, Jon Giffin, and Somesh Jha. Automatic generation of remediation procedures for malware infections. In *Proceedings of the 19th USENIX Security Symposium*, Washington, DC, USA. *acceptance rate: 14.8% (30/202)*

Drew Davidson, Randy Smith, Nic Doyle, and Somesh Jha. Protocol normalization using attribute grammars. In *ESORICS*, pages 216–231, 2009. *acceptance rate: 15.8% (54/340)*

Posters

Drew Davidson, Matt Fredrikson, Somesh Jha, Thomas Reps. Privacy in Statistical Models & AppWeave. DARPA Clean-Slate Design of Resilient, Adaptive, Secure Hosts (CRASH), 2015

Drew Davidson, Matt Fredrikson, Bill Harris, Somesh Jha, Rich Joiner, Thomas Reps. Policy Weaving for Systems Security, DARPA Clean-Slate Design of Resilient, Adaptive, Secure Hosts (CRASH), 2014

Drew Davidson, WebHarbor: Secure Integration of Web Content with Mobile Apps. Speaker, Wisconsin Institute on Software-defined Datacenters Of Madison (WISDOM) Workshop, 2015.

Drew Davidson, Finding Vulnerabilities in Embedded Systems using Symbolic Execution. Speaker, Wisconsin Institute on Software-defined Datacenters Of Madison (WISDOM) Workshop, 2014.

Technical Reports & Manuscripts

Vaibhav Rastogi, **Drew Davidson**, Lorenzo De Carli, Somesh Jha, and Patrick McDaniel. Cimplifier: Automatically Debloating Containers

Drew Davidson and Benjamin Livshits. Morepriv: Mobile os-wide application personalization. In *Microsoft Research Technical Report*, May 2012

Invited Talks & Lectures

Market-Scale Security Analysis of Mobile Applications. Keynote Speaker, QTech 2016.

x86 Review: Process Layout, ISA, etc. Guest Lecturer, CS642: Computer Security. 2014,2015,2016.

WebHarbor: Secure Integration of Web Content with Mobile Apps. Speaker, Wisconsin Institute on Software-defined Datacenters Of Madison (WISDOM) Workshop. 2015.

Finding Vulnerabilities in Embedded Systems using Symbolic Execution. Speaker, Wisconsin Institute on Software-defined Datacenters Of Madison (WISDOM) Workshop, 2014.

Service

Community

Officer, University of Wisconsin ACM Student Chapter, 2013-2016

Program Committee Member

13th Asian Internet Engineering Conference (AINTEC) 2017

Mobile Security Technologies (MoST), 2016

Journal Reviewer

Security and Communication Networks, 2017

Transactions on Information and System Security (TISSEC), 2013

Conference External Reviewer

39th ACM/IEEE International Conference on Software Engineering (ICSE), 2017

13th Conference on Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA) 2016,

4th Conference on Principles of Security and Trust (POST) 2015

International Symposium on Engineering Secure Software and Systems (ESSOS), 2015

Tenth International Conference on Information Systems Security (ICISS) 2014

21st ACM Conference on Computer and Communications Security (CCS), 2014

International Symposium on Software Testing and Analysis (ISSTA), 2014

IEEE Computer Security Foundations Symposium (CSF), 2014

International Conference on Computer Aided Verification (CAV), 2014

First Annual Symposium and Bootcamp on the Science of Security (HotSoS), 2014

Conference on Principles of Security and Trust (POST), 2014

9th International Conference on Information Systems Security (ICISS) 2013

25th International Conference on Computer Aided Verification (CAV) 2013

The 20th Annual Network & Distributed System Security Symposium, (NDSS) 2013

8th International Conference on Information Systems Security (ICISS), 2012

24th International Conference on Computer Aided Verification (CAV), 2012,

European Symposium on Programming (ESOP), 2012

Teaching Experience

Fall 2014	**Instructor of Record**, CS 536: Compilers University of Wisconsin
2007–2008	**Undergraduate Teaching Assistant Coordinator** University of Arizona
2004–2008	**Undergraduate Teaching Assistant**, Various CS Courses University of Arizona