

BENJAMIN ERIC ANDOW

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EDUCATION

North Carolina State University Raleigh, NC, U.S.A.

Ph.D., Computer Science, Fall 2013 - Present

Dissertation Title Security and Privacy Risks of Sensitive User Data Exposure in Mobile Ecosystems

Advisor: Dr. William Enck

Cleveland State University Cleveland, OH, U.S.A.

B.S., Computer and Information Science; Minor in Mathematics, 2013

Mentor: Dr. Haodong Wang

ACADEMIC AND RESEARCH APPOINTMENTS

North Carolina State University, Raleigh, NC (Fall 2013 - Current)

Research Assistant, Wolfpack Security and Privacy Research (WSPR) Lab

- *Research Overview:* My research interests broadly fall within the area of systems security, with a primary focus on (1) the security and privacy analysis of computing platforms, predominantly mobile platforms and IoT, and the applications targeted towards those platforms; and (2) the design and analysis of practical security and protection mechanisms for these platforms. My research generally involves building real systems and tools to address or perform large-scale empirical measurements of security and privacy risks. I am particularly interested in applying natural language processing, text analytics, program analysis, and data analytics techniques to extract and draw insights about security and privacy-relevant information and leverage it to identify security and privacy risks or allow systems to autonomously make informed security and privacy decisions.
- *Other responsibilities:* Current maintainer of the TaintDroid dynamic taint analysis platform; Administrator of lab servers and virtual machines.

Cleveland State University, Cleveland OH (January 2013 - May 2013)

Undergraduate Research Assistant

- Designed and implemented a reference monitor in the Android middleware to enforce dynamic data-centric security policy enforcement, sensitive data classification, and propagation control.

Cleveland State University, Cleveland, OH (August 2013 - December 2012)

Teaching Assistant

- Provided hands-on aid for CIS424/524, a mixed senior-level undergraduate and graduate-level course on programming language paradigms.

Cleveland State University, Cleveland, OH (Summer 2012)

Undergraduate Research Assistant

- Designed and implemented a mobile application and a secure application-layer communication protocol to transfer medical records to mobile devices.

INDUSTRIAL EXPERIENCE

IBM T.J. Watson Research Center, Yorktown Heights, NY (Summer 2016)

Research Intern

- Performed a systematic security analysis on Internet of Things (IoT) infrastructures to identify security challenges and vulnerabilities in current infrastructures.

Hewlett Packard Laboratories, Palo Alto, CA (Summer 2014)

Research Associate Intern

- Designed and implemented a radio power management system on Android based on user consumption behaviors, which entailed modifications to the Linux kernel, drivers, and the Android middleware.

PUBLICATIONS

- Sigmund Albert Gorski III, Benjamin Andow, Adwait Nadkarni, Sunil Manandhar, William Enck, Eric Bodden and Alexandre Bartel. **ACMiner: Extraction and Analysis of Authorization Checks in Android's Middleware**, *Proceedings of the ACM Conference on Data and Application Security (CODASPY)*, March 2019. Dallas, TX, USA.
- Benjamin Andow, Akhil Acharya, Dengfeng Li, William Enck, Kapil Singh, and Tao Xie. **UiRef: Analysis of Sensitive User Inputs in Android Applications**, *Proceedings of the ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)*, July 2017. Boston, MA, USA.

- Rui Shu, Peipei Wang, Sigmund A. Gorski III, Benjamin Andow, Adwait Nadkarni, Luke Deshotels, Jason Gionta, William Enck, and Xiaohui Gu. **A Study of Security Isolation Techniques**, *ACM Computing Surveys (CSUR)* 49(3), December 2016.
- Adwait Nadkarni, Benjamin Andow, William Enck, and Somesh Jha. **Practical DIFC Enforcement on Android**, *Proceedings of the USENIX Security Symposium*, August 2016. Austin, TX, USA.
- Benjamin Andow, Adwait Nadkarni, Blake Bassett, William Enck, and Tao Xie. **A Study of Grayware on Google Play**, *Proceedings of the IEEE Mobile Security Technologies Workshop (MoST)*, May 2016. San Jose, CA, USA.
- Wei Yang, Xusheng Xiao, Benjamin Andow, Sihan Li, Tao Xie and William Enck. **AppContext: Differentiating Malicious and Benign Mobile App Behavior under Contexts**, *Proceedings of the 37th International Conference on Software Engineering (ICSE)*, May 2015. Florence, Italy.

PATENTS

- US Patent App. US20180359266A1, **Enforcing Access Control in Trigger-action Programming using Taint Analysis**, Benjamin Andow, Suresh Chari, Heqing Huang, and Kapil Singh, December 13, 2018.
- WO Patent App. WO2016122444A1, **Regulating a Power Consumption State of a Cellular Radio**, Souvik Sen and Benjamin Andow, April 8, 2016.

PRESENTATIONS

- **UiRef: Analysis of Sensitive User Inputs in Android Applications**, at the *ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)*, Boston, Massachusetts, July 2017.
- **A Study of Grayware on Google Play**, at the *IEEE Mobile Security Technologies Workshop (MoST)*, San Jose, California, May 2016.
- **Smart Isolation**, at the *Science of Security Community Forum*, North Carolina State University, Raleigh, NC, October 2014.

TEACHING EXPERIENCE

- Guest Lecture on **Public Key Cryptography (CSC574)**, Spring 2018.
- Guest Lecture on **TCP/IP Attacks (CSC574)**, Spring 2018.
- Guest Lecture on **Firewalls and IDS (CSC574)**, Spring 2018.

PROFESSIONAL SERVICE

- **Program Chair:** IEEE Mobile Security Technologies Workshop (MoST), 2017.
- **Web Chair:** IEEE Symposium on Security and Privacy, 2018, 2019.
- **Reviewer:** The USENIX Security Symposium, 2015, 2018; The International Symposium on Research in Attacks, Intrusions and Defenses (RAID), 2015; ISOC Network and Distributed System Security Symposium (NDSS), 2016, 2017, 2018, 2019; ACM Conference on Data and Application Security and Privacy (CODASPY), 2016; ACM Conference on Computer and Communications Security (CCS), 2016; Annual Computer Security Applications Conference (ACSAC), 2016; ACM CCS Workshop on Security and Privacy in Smartphones and Mobile Devices (SPSM), 2016; ACM CCS Workshop on Artificial Intelligence and Security (AISec), 2016; ACM Transactions on Privacy and Security (TOPS), 2017.

OPEN SOURCE CONTRIBUTIONS

- Ported TaintDroid to Android 4.3. <https://github.com/TaintDroid/taintdroid-project>
- Implemented Ng et al.'s dissimilarity measure for KModes. <https://github.com/nicodv/kmodes/pull/44>

AWARDS AND ACHIEVEMENTS

- IEEE Student Travel Award (IEEE S&P 2016)
- ACM Student Travel Award (ACM WiSec 2017)