

Bradley Reaves
Curriculum Vitae

<https://bradreaves.net>

Education

University of Florida

Doctor of Philosophy, Computer Engineering August 2017
Dissertation: "Authentication Techniques for Heterogeneous Telephone Networks"

Georgia Institute of Technology

Master of Science, Computer Science (*in residence*) May 2015
Emphasis: Information Security
Higher Education Certificate

Mississippi State University

Master of Science, Computer Engineering August 2011
Thesis: "An Open Virtual Testbed for Industrial Control System Security Research"
Information Security Certificate

Bachelor of Science, summa cum laude, Computer Engineering May 2010
Minors in Spanish and Mathematics

Academic Experience

Assistant Professor August 2017 — Present
Department of Computer Science
North Carolina State University

FICS Lead Graduate Student January 2016 — January 2017
Predoctoral Fellow January 2015 — July 2017
University of Florida

Graduate Research Assistant August 2011 — December 2014
Georgia Institute of Technology

Graduate Research Assistant May 2010 — July 2011
Mississippi State University

Undergraduate Research Assistant January 2009 — May 2010
Mississippi State University

Industry Experience

Intern, Product Security May 2015 — August 2015
Qualcomm Technologies Inc.

Intern, Software Security Research May 2012 — August 2012
Hewlett Packard Company

Students

Current Undergraduate Researchers: Saran Ahluwalia

Current PhD Committees: Luke Deshotels [advised by Dr. William Enck].

Honors

- National Science Foundation Graduate Research Fellowship
- Symantec Research Labs Fellowship Finalist
- Harris Corporation Fellowship (UF)
- Gartner Group Info Tech Fund Scholarship (UF)
- James Worth Bagley Supplemental Fellowship (MSU)
- Best Paper Award: “MAST: Triage for Market-scale Mobile Malware Analysis”
- Best Paper Award: “On SCADA Control System Command and Response Injection and Intrusion Detection”
- Best Poster Award: “Boxed Out: Blocking Cellular Interconnect Bypass Fraud at the Network Edge” at the 2016 FICS Conference
- Best Undergraduate Poster: B. Reaves and T. Morris, “Vulnerabilities in a Proprietary SCADA Wireless System.” 2010 IEEE Power Energy Society Transmission and Distribution Conference.
- Distinguished Poster Award: “AuthentiCall: Efficient Identity and Content Authentication for Phone Calls” at NDSS 2017
- Student Travel Grants to CCS 2012, the 2013 Trusted Infrastructure Workshop, ACSAC 2014 and 2015, NDSS 2015, USENIX Security 2015, and WiSec 2017

Journal Publications

- [1] Patrick Traynor, Kevin R.B. Butler, Jasmine Bowers, and **Bradley Reaves**. Fintechsec: Addressing the security challenges of digital financial services. *IEEE S&P Magazine*, 15(5):85–89, October 2017.
- [2] Stephan Heuser, **Bradley Reaves**, Praveen Kumar Pendyala, Henry Carter, Alexandra Dmitrienko, William Enck, Negar Kiyavash, Ahmad-Reza Sadeghi, and Patrick Traynor. Phonion: Practical Protection of Metadata in Telephony Networks. *Proceedings on Privacy Enhancing Technologies*, 2017(1), January 2017.
- [3] **Bradley Reaves**, Jasmine Bowers, Nolen Scaife, Adam Bates, Arnav Bhartiya, Patrick Traynor, and Kevin R.B. Butler. Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World. In *ACM Transactions on Privacy and Security*, 2017.
- [4] **Bradley Reaves**, Jasmine Bowers, Sigmond A. Gorski III, Olabode Anise, Rahul Bobhate, Raymond Cho, Hiranava Das, Sharique Hussain, Hamza Karachiwala, Nolen Scaife, Byron Wright, Kevin Butler, William Enck, and Patrick Traynor. *droid: Assessment and Evaluation of Android Application Analysis Tools. *ACM Computing Surveys*, 49(3), October 2016.
- [5] **Reaves, Bradley** and Thomas Morris. Analysis and mitigation of vulnerabilities in short-range wireless communications for industrial control systems. *International Journal of Critical Infrastructure Protection*, 2012.
- [6] **Reaves, Bradley** and Thomas Morris. An open virtual testbed for industrial control system security research. *International Journal of Information Security*, 11(4):215–229, 2012.
- [7] Thomas Morris, Anurag Srivastava, **Bradley Reaves**, Wei Gao, Kalyan Pavurapu, and Ram Reddi. A control system testbed to validate critical infrastructure protection concepts. *International Journal of Critical Infrastructure Protection*, August 2011.

Peer-reviewed Conference Publications

- [8] Christian Peeters, Hadi Abdullah, Nolen Scaife, Jasmine Bowers, Patrick Traynor, **Bradley Reaves**, and Kevin Butler. Sonar: Detecting SS7 Redirection Attacks Via Call Audio-Based Distance Bounding. In *Proceedings of the 39th IEEE Symposium on Security and Privacy*, 2018.
- [9] **Bradley Reaves**, Logan Blue, Hadi Abdullah, Luis Vargas, Patrick Traynor, and Tom Shrimpton. AuthentiCall: Efficient Identity and Content Authentication for Phone Calls. In *Proceedings of the 26th USENIX Security Symposium*, August 2017. (Acceptance Rate: 16.3%).
- [10] Jasmine Bowers and **Bradley Reaves** and Imani N. Sherman and Patrick Traynor and Kevin Butler. Regulators, Mount Up? Analysis of Privacy Policies for Mobile Money Applications. In *Proceedings of the Thirteenth Symposium on Usable Privacy and Security*, July 2017. (Acceptance Rate: 26.5%).
- [11] Adam Bates, Wajih Ul Hassan, Kevin Butler, Alin Dobra, **Bradley Reaves**, Patrick Cable, Thomas Moyer, and Nabil Schear. Transparent Web Service Auditing via Network Provenance Functions. In *Proceedings of the 26th International World Wide Web Conference*, April 2017. (Acceptance Rate: 17%).
- [12] **Bradley Reaves**, Logan Blue, and Patrick Traynor. Authloop: Practical End-to-End Cryptographic Authentication for Telephony over Voice Channels. In *Proceedings of 25th USENIX Security Symposium*, Austin, TX, August 2016. (Acceptance Rate: 15.5%).
- [13] **Bradley Reaves**, Logan Blue, Dave Tian, Patrick Traynor, and Kevin R. B. Butler. Detecting SMS Spam in the Age of Legitimate Bulk Messaging. In *Proceedings of the 9th ACM Conference on Security and Privacy in Wireless and Mobile Networks*, July 2016. *Short Paper*. (Acceptance Rate: 28.0%).
- [14] **Bradley Reaves**, Nolen Scaife, Dave Tian, Logan Blue, Patrick Traynor, and Kevin Butler. Sending Out an SMS: Characterizing the Security of the SMS Ecosystem with Public Gateways. In *Proceedings of the 37th IEEE Symposium on Security and Privacy*, San Jose, CA, May 2016. (Acceptance Rate: 13.0%).
- [15] **Bradley Reaves**, Nolen Scaife, Adam Bates, Patrick Traynor, and Kevin R.B. Butler. Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World. In *Proceedings of the 24th USENIX Security Symposium*, 2015. (Acceptance Rate: 15.7%).
- [16] **Bradley Reaves**, Ethan Shernan, Adam Bates, Henry Carter, and Patrick Traynor. Boxed Out: Blocking Cellular Interconnect Bypass Fraud at the Network Edge. In *Proceedings of the 24th USENIX Security Symposium*, 2015. (Acceptance Rate: 15.7%).
- [17] David Dewey, **Bradley Reaves**, and Patrick Traynor. Uncovering Use-After-Free Conditions In Compiled Code. In *Proceedings of the 2015 International Conference on Availability, Reliability, and Security (ARES)*, 2015. (Acceptance Rate: 22.0%).
- [18] Charles Lever, Manos Antonakakis, **Brad Reaves**, Patrick Traynor, and Wenke Lee. The Core of the Matter: Analyzing Malicious Traffic in Cellular Carriers. In *Proceedings of the 20th Network and Distributed System Security Symposium*, San Diego, CA, February 2013. (Acceptance Rate: 18.8%).
- [19] Saurabh Chakradeo, **Bradley Reaves**, Patrick Traynor, and William Enck. MAST: Triage for Market-scale Mobile Malware Analysis. In *Proceedings of the ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)*, 2013. (Acceptance Rate: 15.0%).
- [20] Wei Gao, Thomas Morris, **Bradley Reaves**, and Drew Richey. On SCADA Control System Command and Response Injection and Intrusion Detection. In *IEEE eCrime Researchers Summit*, Dallas, TX, October 2010.
- [21] **Bradley Reaves** and Thomas Morris. Discovery, Infiltration, and Denial of Service in a Process Control System Wireless Network. In *2009 eCrime Researchers Summit*, Tacoma, WA, USA, October 2009.

- [22] Thomas Morris, Anurag Srivastava, **Bradley Reaves**, Kalyan Pavurapu, Sharif Abdelwahed, Rayford Vaughn, Wesley McGrew, and Yoginder Dandass. Engineering Future Cyber-Physical Energy Systems: Challenges, Research Needs, and Roadmap. In *2009 IEEE North American Power Symposium*, Starkville, MS, October 2009.

External Service

- Program Committee Member: USENIX Security Symposium 2018
- Program Committee Member: Networked and Distributed System Security Symposium 2018
- Program Committee Member: Workshop on Usable Security (USEC) 2018
- Program Committee Member: Mobile Security Technologies (MoST) Workshop 2017
- Program Committee Member: European Workshop on Usable Security 2017
- Program Committee Member: USENIX Workshop on Offensive Technologies 2016
- Publicity Chair: Networked and Distributed System Security Symposium 2018
- Web Chair: IEEE Symposium on Security and Privacy 2017
- Reviewer: Communications of the ACM 2012
- Reviewer: IEEE Security and Privacy Magazine 2013
- Reviewer: IEEE Transactions on Dependable and Secure Computing 2013
- Reviewer: ACM Transactions on Privacy and Security 2016
- Reviewer: ACM Transactions on Internet Technology 2016
- Reviewer: IEEE Transactions on Information Forensics and Security 2016, 2017
- Reviewer: IEEE Transactions on Emerging Topics in Computer Science 2014
- Reviewer: Journal of Information Security and Applications 2017
- Reviewer: IEEE Symposium on Security and Privacy 2013, 2014, 2016
- Reviewer: ACM Conference on Computer and Communications Security 2013–2016
- Reviewer: ISOC Networked and Distributed System Security Symposium
- Reviewer: USENIX Security Symposium 2013 – 2016
- Reviewer: USENIX Symposium on Operating Systems Design and Implementation 2016
- Reviewer: ACM Conf. on Security and Privacy in Wireless and Mobile Networks 2016–2017
- Reviewer: Financial Cryptography and Data Security 2013
- Reviewer: Annual Computer Security Applications Conference 2014–2015
- Reviewer: Privacy Enhancing Technologies Symposium 2014
- Reviewer: Recent Advances in Intrusion Detection 2015
- Reviewer: IEEE European Symposium on Security and Privacy 2016
- Reviewer: International World Wide Web Conference 2016

Professional Societies

- Institute of Electrical and Electronics Engineers
- Association for Computing Machinery
- USENIX, the Advanced Computing Systems Association
- Tau Beta Pi Engineering Honor Society
- Eta Kappa Nu Electrical and Computer Engineering Honor Society
- Upsilon Pi Epsilon Computer Science and Engineering Honor Society

Relevant Skills

- Programming Languages: Python, C, Java, Matlab, CoffeeScript, Groovy, PLC Ladder Logic, SQL, Gremlin, C++, C#, Tcl, R, JavaScript
- Operating Systems: Android, OS X, Ubuntu and Fedora Linux, Windows
- Tools: Vim, ~~LaTeX~~ LaTeX, Git, Subversion, MongoDB, Neo4J
- Citizenship: United States of America