

# GRANT HERNANDEZ

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## Education

### University of Florida

GPA: 3.80 • Ph.D. Computer Engineering

Gainesville, FL (2015 - Present)  
Expected Spring 2020

### University of Central Florida

GPA: 3.81, Magna Cum Laude • B.S. Computer Engineering

Orlando, FL (2011 - 2015)  
Awarded August 2015

## Research Experience

### University of Florida, Research Assistant with FICS

Gainesville, FL – Fall 2015 - Present

- **Advisor:** Dr. Kevin R. B. Butler
- **Area:** Systems security
- Performing large-scale analysis of Android firmware to explore hidden USB interfaces and device security policies
- Analyzing USB firmware using symbolic execution to automatically reason about firmware functionality
- Employed Intel SGX to balance Secure Function Evaluation (SFE) security with performance
- Worked to improve TLS security and agility through server-side enhancements

### University of Central Florida, Undergraduate Research Assistant

Orlando, FL – Summer 2013 - 2014

- **Advisor:** Dr. Yier Jin
- **Area:** Internet of Things security
- Discovered a USB entry point into Google's Nest Thermostat allowing full-root access
- Published findings at Black Hat USA 2014 entitled "Smart Nest Thermostat: A Smart Spy in your Home"

### University of Central Florida, EXCEL Undergraduate Research

Orlando, FL – Spring 2013

- **Advisor:** Dr. Mingjie Lin
- **Area:** Reconfigurable Hardware
- Explored Verilog through working with a hardware JPEG decoder

## Publications & Academic Work

### Academic Conferences

1. **G. Hernandez**, F. Fowze, D. Tian, T. Yavuz, and K. Butler. FirmUSB: Vetting USB Device Firmware using Domain Informed Symbolic Execution. *ACM CCS*, 2017.
2. S. Etigowni, D. Tian, **G. Hernandez**, S. Zonouz, and K. Butler. CPAC: Securing Critical Infrastructure with Cyber-Physical Access Control. *ACSAC*, 2016.

### Industry Conferences

1. **G. Hernandez**, O. Arias, D. Buentello, and Y. Jin. Smart Nest Thermostat: A Smart Spy in your Home. *Black Hat USA*, 2014.

### Journals

1. A. Bates, D. Tian, **G. Hernandez**, T. Moyer, K. Butler, and T. Jaeger. Taming the Costs of Trustworthy Provenance through Policy. *Transactions on Internet Technology (TOIT)*, 2016.

### Posters

1. **G. Hernandez**, D. Tian, J. Choi, V. Frost, C. Ruales, K. Butler, P. Traynor, H. Vijayakumar, L. Harrison, A. Rahmati, and M. Grace. ATtention Spanned: Comprehensive Vulnerability Analysis of AT Commands Within the Android Ecosystem. *SEC Academic Conference*, Apr. 2018. (**Best Poster**)
2. —. ATtention Spanned: Comprehensive Vulnerability Analysis of AT Commands Within the Android Ecosystem. *FICS Conference*, Mar. 2018.
3. **G. Hernandez**, F. Fowze, D. Tian, C. Metcalf, T. Yavuz, and K. Butler. FirmUSB: Vetting USB Device Firmware using Domain Informed Symbolic Execution. *FICS Conference*, Mar. 2017. (**Best Poster**)
4. **G. Hernandez**, A. Bates, and K. Butler. SSL Certificate Verification Enhancements for the Server. *FICS Conference*, 2016

5. **G. Hernandez** and Y. Jin. Smart Nest Thermostat: A Smart Spy in your Home. *UCF Showcase for Undergraduate Research, 2015*

#### Workshops

1. S. Deshmukh, H. Carter, **G. Hernandez**, P. Traynor, and K. Butler. Efficient and Secure Template Blinding for Biometric Authentication. *Proceedings of the IEEE Workshop on Security and Privacy in the Cloud (SPC), 2016.*

## Academic Service

#### Program Chair Assistant

- *Network & Distributed System Security Symposium (NDSS)* – 2017  
Assisted Ari Juels with recording HotCRP accept/reject decisions, limiting paper discussion time, and synchronizing dual-track PC meeting via custom spreadsheet.

#### External Reviewer

- *IEEE Symposium on Security & Privacy* (Oakland, S&P) – 2017
- *USENIX Security Symposium* (USENIX Security) – 2017
- *ACM Conference on Computer and Communications Security (CCS)* – 2016, 2017
- *ACM Asia Conference on Computer and Communications Security (AsiaCCS)* – 2017, 2018
- *Annual Computer Security Applications Conference (ACSAC)* – 2017
- *Network & Distributed System Security Symposium (NDSS)* – 2017, 2018
- *USENIX Symposium on Operating Systems Design and Implementation (OSDI)* – 2016
- *USENIX Workshop on Offensive Technologies Workshop on Offensive Technologies (WOOT)* – 2016, 2017

## Professional Services

- Helped develop, organize and run SwampCTF, a 48 hour international Capture the Flag competition, for the Student InfoSec Team (UFSIT). Built infrastructure using Ansible, Docker, AWS, and Netdata. Over 1,200 registered teams enjoyed our 28 hand-crafted cyber security challenges (2018).
- Founded, advised and trained the University of Florida's Collegiate Cyber Defense Team (UFCCDC) under UF's Registered Student Organization (RSO) the Student InfoSec Team (UFSIT) (2016 – 2017).  
**Reference:** Dr. Joseph Wilson (jnw@cise.ufl.edu)

## Honors & Awards

#### University Florida

- Graduate School Fellowship Award (2015 - 2019)
- Appointed as Florida Institute of National Security (FINS) Fellow (2015)
- Harris Communication Fellowship (2015)
- Best poster: "FirmUSB: Vetting USB Device Firmware using Domain Informed Symbolic Execution." (*FICS Conference*)
- 3<sup>rd</sup> place at the Southeast Regional Collegiate Cyber Defense Competition (SECCDC) (2017)
- CISE Graduate Scholarship (2017)

#### University of Central Florida

- ICubed ( $I^3$ ) Fellow - presented Nest security research to an Advanced Painting class, inspiring their work (2015)
- Winner of the National Collegiate Cyber Defense Competition (NCCDC) out of 180 schools (April 2014)
- 1<sup>st</sup> place at the Southeast Regional Collegiate Cyber Defense Competition (SECCDC) (2013 and 2014)
- 2<sup>nd</sup> place at the UCONN CyberSEED Buffer Overflow competition (2014)
- 6<sup>th</sup> place and 5<sup>th</sup> place at CSAW CTF finals (2013 and 2014 respectively)
- EXCEL Student - NSF STEM only education program with guaranteed Sophomore year research (2011 - 2013)
- 1<sup>st</sup> place at UCF's 25th annual High School Programming Tournament
- UCF President's Honor Role (3 semesters)

## Speaking

1. FirmUSB: Vetting USB Device Firmware using Domain Informed Symbolic Execution. *ACM CCS, 2017.*

2. A Journey into Fuzzing with American Fuzzy Lop. *Hack@UCF, 2015*.
3. Smart Nest Thermostat: Smart Spy in your Home. *Black Hat USA, 2015*.

## Press

1. “Students Place Third in Cyber Defense Competition”  
— Computer & Information Science & Engineering News, University of Florida (Quoted, April 10<sup>th</sup>, 2017)
2. “CISE Students Win at 2017 FICS Research Conference on Cybersecurity”  
— Computer & Information Science & Engineering News, University of Florida (Quoted, April 3<sup>rd</sup>, 2017)
3. “17 ways the Internet of Things can go horribly wrong”  
— ZDNet (Mentioned, March 21<sup>st</sup>, 2016)
4. “UCF Cyber Defense Turns Smart Thermostat Into Potential Spy”  
— UCF Today (Mentioned, August 11<sup>th</sup>, 2014)
5. “A used thermostat could hack your house”  
— CNN Money (Interviewed (video), August 7<sup>th</sup>, 2014)
6. “Is your Watch or Thermostat a Spy? Cybersecurity Firms are on it”  
— NPR - All Things Considered (Interviewed (voice), August 6<sup>th</sup>, 2014)
7. “Nest Hackers Will Offer Tool To Keep The Google-Owned Company From Getting Users’ Data”  
— Forbes Tech (Interviewed, July 16<sup>th</sup>, 2014)
8. “UCF wins Raytheon cyber defense contest”  
— Orlando Sentinel (Mentioned, April 28<sup>th</sup>, 2014)

## Bonus

- I’m a licensed amateur radio operator – KK4QIS