

Sigmund Albert Gorski, III

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Education

North Carolina State University, Raleigh, NC August 2012 – May 2020

Ph.D. in Computer Science

GPA: 3.917/4.0

Advisor: Dr. William Enck

University of Maryland, College Park, MD August 2008 – May 2012

B.S. in Computer Engineering

GPA: 3.815/4.0

Cum Laude

Academic and Professional Experience

Booz Allen Hamilton, Annapolis Junction, MD – Software Security Engineer June 2020 – Present

- Updated and implemented techniques to automate the verification and enforcement of compliance requirements and standards (e.g., OWASP, GDPR, HIPAA, NIST) in Android and iOS apps
- Dynamically analyzed and reverse engineered mobile application code in Java and Objective-C to ensure compliance to standards and detect additional vulnerabilities

North Carolina State University, Raleigh, NC – Graduate Research Assistant August 2012 – May 2020

- **Interests:** Security & Privacy (S&P), S&P of Modern Computing Platforms, and Access Control of Complex Systems
- **Overview:** Developing static and program analysis tools that aid developers and security researchers in:
 1. Understanding the complex interactions of the different forms of access control in modern computing platforms
 2. Applying this understanding to automate the identification of vulnerabilities in the access control of these platforms
- **Highlights:** Developed three semi-automated tools (**ACMiner**, **ARF**, and **Coming Soon**) that have uncovered dozens of vulnerabilities in the access control of the Android Platform
 - Reported all vulnerabilities to Google
 - Received 10 CVEs from Google for the more severe vulnerabilities, the less severe issues were also fixed

Qualcomm, San Diego, CA – Research Intern Summer 2015

- Vetted the effectiveness of an OpenWrt Jail solution for reducing the damage caused by compromised root processes
- Other responsibilities include aiding in the vulnerability analysis of both OpenWrt and Android

Department of Homeland Security, Washington, D.C. – Summer Intern Summers 2010 – 2012

- Planned and designed a Microsoft Access database for tracking all civil engineers in the U.S. Coast Guard
- Designed Visual Basic programs to process and properly format data
- Received Letters of Commendation from Captain T.W. Jones, Chief, Office of Civil Engineering, Headquarters, U.S. Coast Guard, Washington D.C.

Low Income Taxpayer Clinic (LITC) branch of the IRS, Washington, D.C. – Summer Intern Summer 2009

- Planned, designed, and implemented an internal and external website for the LITC office
- Assisted in updating databases and other information resources currently on the LITC webpage

Queen Anne School, Technology Department, Upper Marlboro, MD – System Administrator Summers 2004 – 2008

- Updated software on all computers on campus; installed new software and repaired computers
- Helped to organize and inventory all computers on campus
- Assisted in modifying and updating the Queen Anne School website

Publications

Conference 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**. In proceedings of the Ninth ACM Conference on Data and Application Security and Privacy (CODASPY), March 2019, Dallas, Texas, USA. (Acceptance Rate: 23.5%).
- **Sigmund Albert Gorski III** and William Enck. **ARF: Identifying Re-Delegation Vulnerabilities in Android System Services**. In proceedings of the 12th ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec), May 2019, Miami, Florida, USA. (Acceptance Rate: 25.6%).

Journal Publications.....

- 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), October 2016.

- Bradley Reaves, Jasmine Bowers, **Sigmund Albert 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 (CSUR), 49(3), October 2016.

Tech Reports

- **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**. <http://arxiv.org/abs/1901.03603>, arXiv:1901.03603, January 2019.

Technical Skills

Languages: Java, Perl, Python, C, C++, HTML, PHP, JavaScript, SQL, Ruby, OCaml

Operating Systems: Android, Unix, Linux, Windows 10/8/7/XP

Networking: TCP/IP, SSH, SSL, IPsec, Routing Protocols

Tools: Soot/Heros, Smali/Baksmali, Eclipse, IDA Pro, LaTeX, Matlab, Microsoft Office, Microsoft Access

Relevant Classes

North Carolina State University: Computer and Network Security, Operating Systems Security, Operating Systems, Computer Networks, Design and Analysis of Algorithms, Languages and Computability Theory

University of Maryland: Reverse Engineering, Computer and Network Security, Cryptology, Operating Systems, Introduction to Algorithms, Data Structures, Software Engineering

Presentations

- **ACMiner: Extraction and Analysis of Authorization Checks in Android's Middleware**, Conference on Data and Application Security and Privacy (CODASPY), Richardson, TX, USA, March 2019
- **ARF: Identifying Re-Delegation Vulnerabilities in Android System Services**, Conference on Security and Privacy in Wireless and Mobile Networks (WiSec), Miami, FL, USA, May 2019

Professional Activities

- Conference Reviewer, Network and Distributed Systems Security Symposium (NDSS) 2016, 2018
- Eta Kappa Nu Gamma, Xi Chapter Webmaster, University of Maryland, College Park 2010 – 2012
- Tau Beta Pi, Beta Chapter Webmaster, University of Maryland, College Park 2010 – 2012
- Computer Security Club Member, University of Maryland, College Park 2009 – 2012
- Hunger and Homelessness Awareness Planning Board, University of Maryland, College Park 2008 – 2010

Common Vulnerabilities and Exposures (CVEs)

ACMiner: CVE-2019-9351, CVE-2019-9377, CVE-2019-9438

ARF: CVE-2019-2098, CVE-2019-2092, CVE-2019-2091, CVE-2019-2090

Coming Soon: CVE-2020-0208, CVE-2020-0209, CVE-2020-0210

Open Source Contributions

Improvements and Bug Fixes

- Soot: Java Static Analysis Framework, github.com/Sable/soot/commits?author=agorski3
- Smali/Baksmali: Android DEX assembler/disassembler, github.com/JesusFreke/smali/commits?author=agorski3

Tools Developed

- ACMiner: Extraction and Analysis of Authorization Checks in Android's Middleware, wspr.csc.ncsu.edu/acminer
- ARF: Identifying Re-Delegation Vulnerabilities in Android System Services, wspr.csc.ncsu.edu/arf

Awards and Honors

- Network and Distributed Systems Security Symposium (NDSS) Student Travel Grant 2018
- North Carolina State University, Dean's Doctorial Fellowship 2012 – 2013
- North Carolina State University, Graduate Fellowship 2012 – 2013
- Eta Kappa Nu (HKN), the Electrical and Computer Engineering Honor Society Inducted Spring, 2010
- Tau Beta Pi (TBP), the Engineering Honor Society Inducted Fall, 2010
- Phi Kappa Phi Honor Society Inducted Fall, 2010

- Inventis, Academy of Engineering Leadership 2008 – 2010
- Primannum Honor Society, Alpha Lambda Delta and Phi Eta Sigma Inducted April, 2008
- Paul Harris Fellow, Rotary International District 7620 May, 2007
- Eagle Scout: Advanced to the rank of Eagle November 10, 2005