

# Giuseppe Petracca

SOFTWARE ENGINEER AND SECURITY RESEARCHER · PH.D. CANDIDATE IN COMPUTER SCIENCE AND ENGINEERING · **SEEKING FULL-TIME POSITION**

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## Education

### The Pennsylvania State University

PH.D. IN COMPUTER SCIENCE AND ENGINEERING (GPA 3.9)

University Park, PA, U.S.A

Aug. 2012 - **Expected May 2018**

- Doctoral Thesis: Controlling Information Flows from Privacy-Sensitive Sensors
- Research Focus: Mobile Operating Systems Security

### Sapienza University of Rome

M.S. IN COMPUTER SCIENCE AND ENGINEERING (GPA 3.89)

Rome, Italy

Jan. 2009 - Oct. 2011

- Master Thesis: Management of Self-Protected Content in Cloud Computing

### Sapienza University of Rome

B.S. IN COMPUTER SCIENCE AND ENGINEERING (GPA 3.95)

Rome, Italy

Sept. 2003 - Dec. 2008

## Industry Experience

### Google Inc. (Mobile Malware Team)

SOFTWARE ENGINEER & SECURITY RESEARCHER

Mountain View, CA, U.S.A.

Jun. 2017 - Sept. 2017

- Designed and implemented extensions to the dynamic analyzer tool for the detection of Ad-Fraud and unwanted apps

### Samsung Research America (Knox Security Team)

SOFTWARE ENGINEER & SECURITY RESEARCHER

Mountain View, CA, U.S.A.

May 2016 - Aug. 2016

- Designed and implemented an automated tool (Bridges) for the analysis of SELinux policies in Android-powered devices

### Intel Labs (Privacy and Intelligence Lab)

GRADUATE TECHNICAL ENGINEER

Hillsboro, OR, U.S.A.

May 2014 - Aug. 2014

- Researched prevention techniques of Return-Oriented Programming (ROP) attacks with shadow stack and return address checksum

### Intel Corporation (Intel Micro Runtime Team)

GRADUATE TECHNICAL ENGINEER

Hillsboro, OR, U.S.A.

May 2013 - Aug. 2013

- Designed and implemented a network communication module between the Intel Micro Runtime and the Software Guard Extension

## Skills

**Software Design and Development:** Android AOSP and SDK, Eclipse IDE, and Java 2 Platform Security

**Programming Languages:** Java (preferred), C, and Python

**Operating Systems:** Android, Linux, Mac, and Windows

**Computer Networks:** ISO/OSI Network Protocols, Mobile Networks, Snort, Wireshark, and Emulab

**Cloud Computing:** OpenStack, Amazon Web Services, Hadoop, and Map Reduce

**Database Design:** SQL and MySQL Workbench

**Web Design:** HTML, XML, JavaScript, Joomla CMS, Servlet/JSP and Web Server Apache Tomcat

**Object Oriented Design:** Unified Modeling Language (UML)

**Software Testing:** JUnit, White-Box, and Black-Box testing

**Project Management:** Constructive Cost Model (COCOMO II), ARANEUS Data Model, and Pert/Gantt Charts

**Other Tools and Languages:** LaTeX, OpenGL, Prolog, Scheme, SML, and Matlab

**Languages Proficiency:** English (Full Professional Proficiency - ILR Level 4), Italian (Native), and Spanish (Basic)

## Academic Projects

### Operating Systems Design

DESIGNED AND IMPLEMENTED USING THE C LANGUAGE:

- A serializer construct for processes synchronization
- A parallel file system for applications file sharing
- A pipe-based module for communication between threads and processes

### System and Network Security

DESIGNED AND IMPLEMENTED USING THE C LANGUAGE:

- A Linux kernel module (Linux 2.3.26) to prevent link traversal attacks
- A man-in-the-middle attack for the Secure Socket Layer using libopenSSL
- A reference monitor for Linux system calls using strace
- A format-string vulnerability attack to obtain root control by exploiting the Global Offset Table (GOT)

# Academic Experience

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## The Pennsylvania State University

University Park, PA, U.S.A.

### GRADUATE RESEARCH ASSISTANT

#### Department of Computer Science and Engineering,

Conducting research in systems security for mobile and cloud computing

Aug. 2012 - Present

#### Collaboration with Hewlett-Packard Labs,

Designed and implemented an network intrusion detection system (ReasOnNets)

Aug. 2011 - Jul. 2012

#### College of Information Sciences and Technology,

Conducted research on social media platforms and security in cloud computing

Feb. 2011 - Jul. 2011

### GRADUATE TEACHING ASSISTANT

**CSE 543: Computer and Network Security**, lead by Dr. T. Jaeger

Fall 2016 and Fall 2017

**CMPSC 461: Programming Language Concepts**, lead by Dr. D. Heller

Fall 2013

**CMPEN/EE 362: Computer Networks**, lead by Dr. T. La Porta

Spring 2013

**CMPEN/EE 362: Computer Networks**, lead by Dr. J. Metzner

Fall 2012

# Conference Publications

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## **AWare: Preventing Abuse of Privacy-Sensitive Sensors via Operation Bindings**

Vancouver, BC, Canada

Giuseppe Petracca, Ahmad-Atamli Reineh, Yuqiong Sun, Jens Grossklags, and Trent Jaeger

2017

*Proceedings of the 26th USENIX Security Symposium, USENIX Security 2017*

## **On Risk in Access Control Enforcement**

Indianapolis, IN, U.S.A.

Giuseppe Petracca, Frank Capobianco, Christian Skalka, and Trent Jaeger

2017

*Proceedings of the 22nd ACM Symposium on Access Control Models and Technologies, SACMAT 2017*

## **Agility Maneuvers to Mitigate Inference Attacks on Sensed Location Data**

Baltimore, MD, U.S.A.

Giuseppe Petracca, Lisa M. Marvel, Ananthram Swami, and Trent Jaeger

2016

*Proceedings of the 35th Premier International Conference for Military Communications, MILCOM 2016*

## **Pileus: Protecting User Resources from Vulnerable Cloud Services**

Los Angeles, CA, U.S.A.

Yuqiong Sun, Giuseppe Petracca, Xinyang Ge, and Trent Jaeger

2016

*Proceedings of the 2016 Annual Computer Security Applications Conference, ACSAC 2016*

## **AuDroid: Preventing Attacks on Audio Channels in Mobile Devices**

Los Angeles, CA, U.S.A.

Giuseppe Petracca, Yuqiong Sun, Ahmad Atamli, and Trent Jaeger

2015

*Proceedings of the 31th Annual Computer Security Applications Conference, ACSAC 2015*

## **CloudArmor: Protecting Cloud Commands from Compromised Cloud Services**

New York, NY, U.S.A.

Yuqiong Sun, Giuseppe Petracca, Vijayakumar Hayawardh, Joshua Schiffman, and Trent Jaeger

2015

*Proceedings of the 8th IEEE International Conference on Cloud Computing, CLOUD 2015*

## **Inevitable Failure: The Flawed Trust Assumption in the Cloud**

Scottsdale, Arizona, U.S.A.

Yuqiong Sun, Giuseppe Petracca, and Trent Jaeger

2014

*Proceedings of the 21st ACM Conference on Computer and Communications Security, ACM CCSW 2014*

## **Situational Awareness through Reasoning on Network Incidents in Controlled Networks**

San Antonio, TX, U.S.A.

Anna Cinzia Squicciarini, Giuseppe Petracca, William Horne, and Aurnob Nath

2014

*Proceedings of the 4th ACM Conference on Data and Application Security and Privacy, ACM CODASPY 2014*

## **Adaptive data protection in distributed systems**

San Antonio, TX, U.S.A.

Anna Cinzia Squicciarini, Giuseppe Petracca, and Elisa Bertino

2013

*Proceedings of the 3th ACM Conference on Data and Application Security and Privacy, ACM CODASPY 2013*

## **ReasONets: a fuzzy-based approach for reasoning on network incidents**

Raleigh, NC, U.S.A.

Giuseppe Petracca, Anna Squicciarini, William Horne, and Marco Casassa Mont

2012

*Proceedings of the 19th ACM Conference on Computer and Communications Security, CCS 2012*

## **Adaptive data management for self-protecting objects in cloud computing systems**

Las Vegas, NV, U.S.A.

Anna Cinzia Squicciarini, Giuseppe Petracca, and Elisa Bertino

2012

*Proceedings of the 8th International Conference on Network and Service Management, 2012, ACM CNSM 2012*

## **Early Detection of Policies Violations in a Social Media Site: A Bayesian Belief Network Approach**

Chapel Hill, NC, U.S.A.

Anna Cinzia Squicciarini, William McGill, Giuseppe Petracca, and Shuo Huang

2012

*Proceedings of the 2012 IEEE International Symposium on Policies for Distributed Systems and Networks, POLICY 2012*

# References

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**Dr. Trent Jaeger**, Professor at the Dept. of Computer Science and Engineering at Penn State

[tjaeger@cse.psu.edu]

**Dr. Anna C. Squicciarini**, Professor at the College of Information Sciences and Technology at Penn State

[acs20@psu.edu]

**Dr. Tiziana Catarci**, Professor at the Dept. of Computer Science and Engineering at Sapienza

[catarci@diag.uniroma1.it]