

Fabio Pagani

AFFILIATION Postdoctoral Researcher, University of California Santa Barbara (UCSB)

CONTACT INFORMATION University of California, Santa Barbara
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BIO I am a postdoctoral researcher working with Giovanni Vigna and Christopher Kruegel in the SecLab at UC Santa Barbara. My current research interests focus on different aspects of systems security: automated vulnerability discovery, human-assisted cyber reasoning systems, and malware analysis are all topics that spark my curiosity.

I earned a Ph.D at EURECOM, where I was advised by Davide Balzarotti. Among other things, we investigated how non-atomic acquisitions impact the consistency of memory dumps, how to discover and to assess the quality of memory forensics heuristics, and how to automatically generate profiles for memory forensics.

When I am away from keyboard, I enjoy hiking, rock climbing, surfing, and playing chess.

EDUCATION **Postdoctoral Researcher** *Jan 2020-Current*
University of California, Santa Barbara, US

Doctor in Philosophy (PhD) *Jan 2016-Sept 2019*
Eurecom, France
Thesis: Advances in Memory Forensics

MSc in Computer Science *Feb 2013-Oct 2015*
Università degli Studi di Milano, Italy
Thesis: Defeating Return Oriented Programming Attacks Using Program Analysis Techniques
Graduated with a final grade of 110/110 cum laude

Internship *Feb 2015-May 2015*
Eurecom, France

Erasmus *Jan 2014-Jun 2014*
Uppsala University, Sweden

BSc in Computer Science *Sep 2009-Feb 2013*
Università degli Studi di Milano, Italy
Thesis: When Hardware Meets Software: A Bulletproof Solution to Forensic Memory Acquisition
Graduated with a final grade of 107/110

- PUBLICATIONS**
- [13] Erik Trickel, **Fabio Pagani**, Chang Zhu, Lukas Dresel, Giovanni Vigna, Christopher Kruegel, Ruoyu Wang, Tiffany Bao, Yan Shoshitaishvili, Adam Doupe. Toss a Fault to Your Witcher: Applying Grey-box Coverage-Guided Mutational Fuzzing to Detect SQL and Command Injection Vulnerabilities. In Proceedings of the 43rd IEEE Symposium on Security and Privacy (IEEE S&P 2022)
 - [12] Kevin Burk, **Fabio Pagani**, Christopher Kruegel, Giovanni Vigna. Decomperson: How Humans Decompile and What We Can Learn From It. In Proceedings of the 31st USENIX Security Symposium (USENIX Security 22)
 - [11] Nicola Ruaro, **Fabio Pagani**, Stefano Ortolani, Christopher Kruegel, Giovanni Vigna. Symbexcel: Automated Analysis and Understanding of Malicious Excel 4.0 Macros. In Proceedings of the 43rd IEEE Symposium on Security and Privacy (IEEE S&P 2022)

- [10] Fabio Gritti, **Fabio Pagani**, Ilya Grishchenko, Lukas Dresel, Nilo Redini, Christopher Kruegel, Giovanni Vigna. HEAPSTER: Analyzing the Security of Dynamic Allocators for Monolithic Firmware Images. In Proceedings of the 43rd IEEE Symposium on Security and Privacy (IEEE S&P 2022)
- [9] **Fabio Pagani**, Davide Balzarotti. AutoProfile: Towards Automated Profile Generation For Memory Analysis. ACM Transactions on Privacy and Security (TOPS) 25, no. 1 (2022)
- [8] Robert McLaughlin, **Fabio Pagani**, Noah Spahn, Christopher Kruegel, Giovanni Vigna. Regulator: Dynamic Analysis To Detect ReDoS. In Proceedings of the 31st USENIX Security Symposium (USENIX Security 22)
- [7] Fabio Gritti, Lorenzo Fontana, Eric Gustafson, **Fabio Pagani**, Andrea Continella, Christopher Kruegel, Giovanni Vigna. SYMBION: Interleaving Symbolic With Concrete Execution. In Proceedings of the IEEE Conference on Communications and Network Security (CNS) 2020
- [6] **Fabio Pagani**, Davide Balzarotti. Back to the Whiteboard: a Principled Approach for the Assessment and Design of Memory Forensic Techniques. In Proceedings of the 28th USENIX Security Symposium (USENIX Security 19) 2019
- [5] **Fabio Pagani**, Oleksii Fedorov, Davide Balzarotti. Introducing the Temporal Dimension to Memory Forensics. ACM Transactions on Privacy and Security (TOPS) 22, no. 2 (2019)
- [4] **Fabio Pagani**, Matteo Dell'Amico, Davide Balzarotti. Beyond Precision and Recall: Understanding Uses (and Misuses) of Similarity Hashes in Binary Analysis. In Proceedings of the Eighth ACM Conference on Data and Application Security and Privacy (CODASPY) 2018
- [3] Marius Muench, **Fabio Pagani**, Yan Shoshitaishvili, Christopher Kruegel, Giovanni Vigna, Davide Balzarotti. Taming Transactions: Towards Hardware-Assisted Control Flow Integrity Using Transactional Memory. In International Symposium on Research in Attacks, Intrusions, and Defenses (RAID) 2016
- [2] **Fabio Pagani**, Matteo De Astis, Mariano Graziano, Andrea Lanzi, Davide Balzarotti. Measuring the Role of Greylisting and Nolisting in Fighting Spam. In Proceedings of the 46th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN) 2016
- [1] Alessandro Reina, Aristide Fattori, **Fabio Pagani**, Lorenzo Cavallaro, Danilo Bruschi. When Hardware Meets Software: a Bulletproof Solution to Forensic Memory Acquisition. In Proceedings of the 28th Annual Computer Security Applications Conference (ACSAC) 2012

TALKS

- [2] Nicola Ruaro, **Fabio Pagani**, Stefano Ortolani, Giovanni Vigna. Symbexcel: Bringing the Power of Symbolic Execution to the Fight Against Malicious Excel 4 Macros. Black Hat USA 2021
- [1] **Fabio Pagani**. Memory Smearing: Myth Or Reality?. SANS DFIR Europe Summit 2019

AWARDS

- [3] Distinguished Reviewer Award - DIMVA 2021
- [2] Volatility Plugin Contest 2019, 5th place
- [1] Black Hat Europe 2016 Student Scholarship

SERVICE

IEEE Symposium on Security and Privacy (S&P) 2023

Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA) 2022

Digital Forensics Research Workshop (DFRWS) USA 2022

IEEE Workshop on Offensive Technologies (WOOT) 2022

Workshop on Binary Analysis Research (BAR) 2022

Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA) 2021

Computers & Security (COSE)

TEACHING EXPERIENCE

Lecture on Memory Forensics (Cybercrime and Computer Forensics)

Eurecom, France

Apr. 2019

Lecture on Python Optimization and Integration (Software Development)

Eurecom, France

Dec. 2018

Lecture on Memory Forensics (Cybercrime and Computer Forensics)

Eurecom, France

May 2018

Lecture on Python Optimization and Integration (Software Development)

Eurecom, France

Dec. 2017

Lecture on Python Optimization and Integration (Software Development)

Eurecom, France

Dec. 2016

Computer Programming - Teaching Assistant

Università degli Studi di Milano, Italy

Sept. 2014 - Feb. 2015

HACKING COMPETITIONS

I am a core member of the NOPS team. Along with my teammates, I qualified twice for the CSAW Europe Finals (in 2017 we got 2nd place) and **won** hxp CTF 2018.