Giulio **De Pasquale**

COMPUTER SECURITY PHD CANDIDATE

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Experience

Visiting Graduate Researcher - SecLab
UNIVERSITY OF CALIFORNIA, SANTA BARBARA
Santa Barbara, California, USA
June 2022 - PRESENT

Current research visit at UCSB. More details soon.
https://seclab.cs.ucsb.edu

Graduate Intern - AIS Applied Research
APPLE
Hybrid @ London, United Kingdom
April 2022 - June 2022

Internship at Applied Research, a team under David Litchfield, as part of Assurance within Apple Information Security.

Visiting PhD Student
UNIVERSITY COLLEGE OF LONDON
London, United Kingdom
June 2021 - PRESENT

Joined UCL's ISec research group to collaborate on ongoing research projects. Coordinated an ongoing series of forthnightly **hands-on seminars** on information security while focusing on solving CTF challenges.
https://sec.cs.ucl.ac.uk

Research Intern
TWEAG I/O
Remote
June 2021 - PRESENT

Worked on the improving the robustness of the type system of **Nickel**, a declarative configuration language. The project is written in **Rust**.
https://github.com/tweag/nickel

Research Intern - NExT Special Projects
MICROSOFT RESEARCH
Redmond, Washington, USA
June 2019 - September 2019

Researched **malware analysis** techniques to detect active threats in **ELF core** files as part of *Microsoft Project Freta*. The project has been developed in **Rust**.
https://aka.ms/freta

Visiting Graduate Researcher - SecLab
UNIVERSITY OF CALIFORNIA, SANTA BARBARA
Santa Barbara, California, USA
January 2018 - July 2018

Researched **deobfuscation** techniques for software protected by VM obfuscation and **fuzzing** methodologies targeting IoT devices.
https://seclab.cs.ucsb.edu

Education

Ph.D Candidate in Computer Security
KING'S COLLEGE LONDON, DEPARTMENT OF INFORMATICS
London, United Kingdom
November 2018 - PRESENT

Post-graduate research programme covering a wide spectrum of Computer Security topics, focusing mainly on **program analysis**. Other research interests include binary obfuscation/deobfuscation methodologies, malware analysis and vulnerability identification and exploitation.
https://s2lab.kcl.ac.uk | Advised by *Prof. Lorenzo Cavallaro*

B.Sc Degree in Engineering of Computing Systems
POLITECNICO DI MILANO
Milan, Italy
September 2011 - September 2017

Degree that covers all the fundamental topics in the IT area, such as Algorithms, Operating Systems, Databases and Computer Architectures, combined with major Engineering subjects including Physics, Math and Algebra.

Publications

DIANE: Identifying Fuzzing Triggers in Apps to Generate Under-constrained Inputs for IoT Devices — *Online*

42nd IEEE Symposium on Security and Privacy *(S&P)* — *May 2021*

DIANE is a tool that combines static and dynamic analysis to find fuzzing triggers and uses them to fuzz IoT devices automatically.

- **Authors:**
  *Nilo Redini, Andrea Continella, Dipanjan Das, **Giulio De Pasquale**, Noah Spahn, Aravind Machiry, Antonio Bianchi, Christopher Kruegel, Giovanni Vigna.*

ShieldFS: A Self-healing, Ransomware-aware Filesystem — *Los Angeles, California, USA*

32nd Annual Computer Security Applications Conference *(ACSAC)* & Black Hat '17 — *December 2016*

ShieldFS is an innovative solution to fight **ransomware** attacks. It automatically creates detection models that distinguish ransomware from benign processes at runtime on the base of the filesystem activity. ShieldFS adapts these models to the filesystem usage habits observed on the protected system.

- **Authors:**
  *Andrea Continella, Alessandro Guagnelli, Giovanni Zingaro, **Giulio De Pasquale**, Alessandro Barenghi, Stefano Zanero, Federico Maggi.*

Personal projects

Rustico

Rustico is a **Rust** cryptocurrency trading bot. It is features a frontend developed with **Svelte and TailwindCSS** and it is extendable with user-programmed trading strategies.

Pasticciotto — *https://github.com/peperunas/pasticciotto*

Pasticciotto is a polymorphic **Virtual Machine** which can be embedded in an application to protect proprietary code. It was developed for the **PoliCTF '17** as a reverse engineering challenge. The project is open source and it is written in **C++**.

Injectopi — *https://github.com/peperunas/injectopi*

Injectopi is a set of tutorials that illustrates multiple **code injection** techniques in the Microsoft Windows environment. The project is open source and it is written in **C**.

AESTracer

AESTracer is a **Microsoft Windows driver** which actively scans running processes for valid AES keyschedules. It has been included in a research project, ShieldFS, which was later published at ACSAC '16. The project was written in **C**.

Technical skills

Operating Systems	Gentoo, NixOS, Arch Linux, Debian, Ubuntu, Microsoft Windows, MacOS
Programming	Python, Rust, Nix, C, TypeScript, Bash, C++, Java, WINAPI
Interests	Reverse engineering, malware analysis, system administration, low-level and systems' programming

Affiliations

Research laboratories	UCL/KCL's *S2Lab*, UCSB's *SecLab*, PoliMi's *NECSTLab*, Polimi's *POuL*
CTF teams	*mHACKeroni*, *Tower of Hanoi*, *Shellphish*, *Phish 'n' Chips*

Volunteering

Residence Welfare Lead — *London, United Kingdom*

King's Residences — *January 2021 - PRESENT*

Residence Welfare Leads are recruited to help residents in King's residences. Welfare Leads are specially trained to live in the Halls and provide an out-of-hours wellbeing support service to our residents, including first aid, mental health and crisis prevention.