

# Giulio De Pasquale

COMPUTER SECURITY ENGINEER

☎ (+39) 348 340 2033 | ✉ me@giugl.io | 🏠 peperunas.github.io | 📱 peperunas | 📄 giuliodepasquale | 🐦 peperunas

## Education

### Ph.D Candidate in Computer Security

*London, United Kingdom*

KING'S COLLEGE LONDON, DEPARTMENT OF INFORMATICS

*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.

Advised by Professor Lorenzo Cavallaro.

### B.Sc Degree in Engineering of Computing Systems

*Milan, Italy*

POLITECNICO DI MILANO

*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 to major Engineering subjects including Physics, Math and Algebra.

## Experience

### Research Intern - NExT Special Projects

*Redmond, Washington, USA*

MICROSOFT RESEARCH

*June 2019 - September 2019*

Researched **malware analysis** techniques on **ELF core** files as part of *Microsoft Project Freta*. The project has been developed in **Rust**.

Advised by Mike Walker.

- **Webpage:** <https://aka.ms/freta>

### Visiting Graduate Researcher - SecLab

*Santa Barbara, California, USA*

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

*January 2018 - July 2018*

Researched **binary deobfuscation** techniques and novel **fuzzing** methodologies targeting IOT devices.

Advised by Professors Christopher Kruegel and Giovanni Vigna.

## 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*

IN PROCEEDINGS OF THE ANNUAL COMPUTER SECURITY APPLICATIONS CONFERENCE (ACSAC)

*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 Barengi, Stefano Zanero, Federico Maggi.

- **Webpage:** <http://shieldfs.necst.it>

---

## Personal projects

---

### Rustico

London, UK

PERSONAL INTEREST

November 2020 - PRESENT

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

### Pasticciotto

Milan, Italy

PoliCTF '17

June 2017

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++**.

- **Webpage:** <https://github.com/peperunas/pasticciotto>

### Injectopi

Milan, Italy

POLITECNICO DI MILANO

February 2017 - May 2017

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**.

- **Webpage:** <https://github.com/peperunas/injectopi>

### AESTracer

Milan, Italy

POLITECNICO DI MILANO

October 2015 - January 2016

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

---

<b>Information Security</b>	Data forensics, memory exploitation, network analysis
<b>Operating Systems</b>	Arch Linux, Gentoo, Debian, Ubuntu, Microsoft Windows, Mac OS X
<b>Programming</b>	C, Python, Rust, Bash, C++, Java, WINAPI
<b>Reverse Engineering</b>	IDA, Binary Ninja, Angr, Radare2
<b>System Administration</b>	Docker, iptables, Wireguard, OpenVPN, Restic, Systemd, Traefik

---

## Language proficiency

---

2016	<b>Test of English for International Communication (TOEIC)</b> , 975/990	Milan, Italy
2011	<b>Test of English as a Foreign Language (TOEFL)</b> , 99/120	Lecce, Italy
2010	<b>Cambridge English: Advanced (CAE)</b> , B	Lecce, Italy

---

## Research Labs

---

### S2Lab

London, United Kingdom

KCL'S SYSTEMS SECURITY RESEARCH LAB

November 2018 - PRESENT

The Systems Security Research Lab (S2Lab) is part of the Cybersecurity group in the Department of Informatics at King's College London.

- **Webpage:** <https://s2lab.kcl.ac.uk/>

### SecLab

Santa Barbara, California, USA

UCSB'S COMPUTER SECURITY RESEARCH LAB

January 2018 - July 2018

The Computer Security Group at UCSB works on tools and techniques for designing, building, and validating secure software systems.

- **Webpage:** <https://seclab.cs.ucsb.edu/>

### NECSTLab

Milan, Italy

POLITECNICO DI MILANO'S NOVEL EMERGING COMPUTING SYSTEM TECHNOLOGIES LABORATORY

March 2014 - September 2017

The NECSTLab is a research laboratory of Politecnico di Milano focusing on a number of different research lines on advanced topics in computing systems.

- **Webpage:** <https://necst.it>

---

## POuL Linux User Group

POLITECNICO OPEN UNIX LABS

Milan, Italy

March 2014 - PRESENT

I am an *honorary member* of POuL, a hackerspace and association of Politecnico di Milano students interested in Linux, hacking and FOSS.

- **Webpage:** <https://poul.org>

## CTF Teams

---

### mHACKeroni

Italy

ITALIAN CAPTURE THE FLAG (CTF) TEAM

May 2019 - PRESENT

mHACKeroni is a CTF team composed of 5 CTF Italian teams. We qualified to **DEFCON 2019 Finals** and placed 5th out of 16 finalists.

- **Webpage:** <https://mhackeroni.it/>

### Phish 'n' Chips

London, United Kingdom

KING'S COLLEGE LONDON CAPTURE THE FLAG (CTF) TEAM

November 2018 - PRESENT

Founder of King's College London CTF team.

### Shellphish

Santa Barbara, California, USA

UCSB'S CAPTURE THE FLAG (CTF) TEAM

January 2018 - July 2018

Helped to organize the **UCSB's iCTF 2018** competition.

- **Webpage:** <https://ictf.cs.ucsb.edu/>

### Tower of Hanoi

Milan, Italy

POLITECNICO DI MILANO'S CAPTURE THE FLAG (CTF) TEAM

September 2014 - PRESENT

Helped to organize the **PoliCTF 2015** competition held during DIMVA 2015 in Milan.

- **Webpage:** <https://polictf.it>

## Talks and Presentations

---

### Advanced Course for Linux System Administration

Milan, Italy

POLITECNICO DI MILANO

March 2016

Introduced the main command line tools along with their usage. The course was mainly aimed at sysadmins and Linux enthusiasts.

- **Slides:** [https://slides.poul.org/2016/corsi-linux-avanzati/Bash\\_e\\_Filtri.pdf](https://slides.poul.org/2016/corsi-linux-avanzati/Bash_e_Filtri.pdf)

### AESTracer - How to find AES keyschedules in kernel-space

Milan, Italy

NECSTLAB @ POLITECNICO DI MILANO

February 2016

Introduced Microsoft Windows driver development basics and how it is possible to hijack running processes in order to find valid AES keyschedules.

- **Slides:** <http://slides.com/giuliodepasquale/aestracer-aeshooker/>