

# Gabriele Digregorio

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🐦 @Io\_no\_\_

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## Education

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- 2023 – now    📖 **Ph.D. Computer Science and Engineering**, Politecnico di Milano, Milano.  
Advisors: Stefano Zanero, Stefano Longari
- 2020 – 2023    📖 **M.Sc. Computer Science and Engineering**, Politecnico di Milano, Milano.  
Thesis title: Tarallo: An End-to-End Framework for Malware Behavior Obfuscation.  
Advisor: Michele Carminati  
Grade: 110/110 cum laude.
- 2017 – 2020    📖 **B.Sc. Computer and Automation Engineering**, Politecnico di Bari, Bari.  
Thesis title (original): Analisi delle prestazioni della tecnologia NB-IoT adattata alle comunicazioni satellitari.  
Thesis title (eng): Analysis of the performance of NB-IoT technology adapted for satellite communications.  
Advisor: Gennaro Boggia  
Grade: 110/110 cum laude.

## Experience

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### Teaching Activities



- Sep 2024 - Dec 2024    📖 **Supplementary Education Activities - Politecnico di Milano** MSc course: Cyber Security Technologies, Procedures, and Policies - Cross-institutional study L. Bocconi, Politecnico di Milano.
- Sep 2024    📖 **Teacher - MADE S.c.a.r.l.** Cyber Security Course – System Vulnerabilities and Potential Attacks, including malware and fraud fundamentals, dark web, and cloud security basics.
- Feb 2024 - May 2024    📖 **Supplementary Education Activities - Politecnico di Milano** MSc course: Computer Security (UIC 587).

## Experience (continued)



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- May 2024  **Teaching** - **Fondazione Politecnico di Milano** Summer school Tech-Camp@POLIMI: the first project in Italy to bring high school students closer to technology courses - **Cybersecurity** Track.
- Mar 2024  **Teacher** - **MADE S.c.a.r.l.** Cyber and Industrial Security course - Introduction to Computer Security.
- Oct 2023  **Co-Teacher** - **Cefriel S.c.a.r.l.** Master Deloitte Security course.


## Talks and Seminars

- Jun 2024  **Speaker** at the IEEE 99th Vehicular Technology Conference. VTC2024-Spring. Marina Bay Sands Hotel, Singapore, Singapore. "Evaluating the Impact of Privacy-Preserving Federated Learning on CAN Intrusion Detection".
- Jul 2024  **Speaker** at the 21st Conference on Detection of Intrusions and Malware & Vulnerability Assessment. DIMVA '24. EPFL, Lausanne, Switzerland. "Tarallo: Evading Behavioral Malware Detectors in the Problem Space"

## Advisory Activities

- 2023 - now  **Co-Advisor** for M.Sc.Theses.
- Oct 2024  **Tutor** - **Cefriel S.c.a.r.l.** Project work for the 2022 PwC Master's program.

## Reviewer Activities

- 2023 - now  **Reviewer** for "Journal of parallel and distributed computing".

## Research Publications

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### Peer-Reviewed Conference Proceedings


- 1** **G. Digregorio**, E. Cainazzo, S. Longari, M. Carminati, and S. Zanero, "Evaluating the impact of privacy-preserving federated learning on can intrusion detection," in *2024 IEEE 99th Vehicular Technology Conference (VTC2024-Spring)*, IEEE, 2024, pp. 1–7.
- 2** **G. Digregorio**, S. Maccarrone, M. D'Onghia, *et al.*, "Tarallo: Evading behavioral malware detectors in the problem space," in *International Conference on Detection of Intrusions and Malware, and Vulnerability Assessment*, Springer, 2024, pp. 128–149.

## Associations & Activities

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I actively participate in Capture The Flag (CTF) competitions with the **mhackeroni** and **Tower of Hanoi** teams. A CTF is a cybersecurity competition where participants have to find a hidden string (the flag) within purposefully vulnerable programs or websites. During CTFs, I usually challenge myself by reversing or exploiting binaries, among other tasks.


In 2024, I was also a technical **trainer** for **Team Italy**, specializing in reverse engineering, dynamic analysis, and side-channel attacks. Team Italy, composed of young talents from the Cybersecurity National Lab's training programs, secured 2nd place at the European Cyber Security Challenge (ECSC) that same year.

2022 - now     **mhackeroni**, union of several CTF Italian teams.

Web-site: <https://mhackeroni.it>.

CTF Highlights:

- **Hack-A-Sat 4** by the Air Force Research Laboratory (the primary scientific research and development center of the United States Department of the Air Force) - World's First CTF in Space - **1st Worldwide Place**,
- **DEF CON 32 Finals** and **DEF CON 31 Finals**, the most prestigious CTF event in the world,
- many others.

2021 - now     **Tower of Hanoi**, CTF team from Politecnico di Milano.

I have been the team's **Treasurer** since 2024.

Web-site: <https://toh.necst.it>.

I have played in almost all the CTFs where Tower of Hanoi has participated since I joined the team. These include several international competitions. You can find a list of the CTFs that Tower of Hanoi has participated in on [CTFTime](#).

Below are some highlights of the most prestigious ones:

- WP CTF 2024 - 1st place,
- Reply CTF 2023 - 3rd place,
- CSAW 2022 - 1st Place in Europe,
- MoleCon CTF 2022 - 2nd place,
- Reply CTF 2022 - 2nd place,
- many others.

2024 - now     **CyberChallenge**, CTF Training Program by Cybersecurity National Lab.

Instructor at Politecnico di Milano's Section.

Web-site: <https://cyberchallenge.it>

## Projects

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Starting from 2023 I am a **maintainer of libdebug**, an open-source Python library to automate the debugging of binary executables with efficiency and programmability in mind. libdebug is used by experts worldwide.



- GitHub: <https://github.com/libdebug/libdebug>
- PyPi: <https://pypi.org/project/libdebug/>

From libdebug, several related projects for which I am the ideator or maintainer were developed, including:

- **liblog**, a Python library designed to make logging management easier across multiple Python packages.



## Courses

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- 2023  **International Summer School on Security & Correctness**, at Graz University of Technology, Austria.
- 2022  **CyberChallenge**, CTF Training Program by Cybersecurity National Lab.

## Awards

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- 2024  **Best Poster Award** for "libdebug, Build Your Own Debugger for a Better (Hello) World" at ACM SIGSAC CCS 2024, Salt Lake City, U.S.A.
-  **Community's Choice Poster Award** for "libdebug, Build Your Own Debugger for a Better (Hello) World" at ACM SIGSAC CCS 2024, Salt Lake City, U.S.A.

## Languages

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-  **Italian**
-  **English**