

Gabriele Digregorio

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Education



- 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



Teaching Activities

- 2024-2025 📖 **Supplementary Education Activities - Politecnico di Milano**
Contributed to MSc courses in **Computer Security** (UIC 587) (AY 2023-24, 2024-25) and **Cyber Security Technologies, Procedures, and Policies** (AY 2024-25), a cross-institutional program with L. Bocconi. Developed **binary and web challenges** for students in the Computer Security course (2023, 2024). Additionally, created **binary reverse engineering challenges** for the **Offensive and Defensive Cybersecurity** course and served as a guest lecturer on reverse engineering, malware analysis, and advanced debugging techniques.



Experience (continued)

- 2023 - 2024  **Corporate & Industrial Cybersecurity Training**
Provided cybersecurity training through **MADE S.c.a.r.l.** and **Cefriel S.c.a.r.l.**. The covered topics included **system vulnerabilities and potential attacks** (Sep 2024) and **basic computer security concepts** (Mar 2024) at MADE. Additionally, co-taught the **Master Deloitte Security Course** at Cefriel (Oct 2023).
- 2024  **Student Engagement Programs**
Contributed to TechCamp@POLIMI, organized by Fondazione Politecnico di Milano, a summer school program aimed at **introducing high school students to cybersecurity** (May 2024).


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

Peer-Reviewed Conference Proceedings

- 1 **G. Digregorio**, R. A. Bertolini, F. Panebianco, and M. Polino, "Poster: Libdebug, build your own debugger for a better (hello) world," in *Proceedings of the 2024 on ACM SIGSAC Conference on Computer and Communications Security*, ser. CCS '24, Salt Lake City, UT, USA: Association for Computing Machinery, 2024, pp. 4976–4978, ISBN: 9798400706363.  DOI: 10.1145/3658644.3691391.
- 2 **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.  DOI: 10.1109/VTC2024-Spring62846.2024.10683636.

- 3 **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.  DOI: 10.1007/978-3-031-64171-8_7.

Associations & Activities

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: 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,

2021 - now

■ **Tower of Hanoi**, CTF team from Politecnico di Milano.

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

Web-site: towerofhanoi.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](https://ctftime.org).

2024 - now

■ **CyberChallenge**, CTF Training Program by Cybersecurity National Lab.

Instructor at Politecnico di Milano’s Section.

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

Projects



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

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

Awards

- 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

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