GIACOMO BENEDETTI

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EXPERIENCE

Ph.D. Student

DIBRIS - University of Genoa

November 2021 – Ongoing Genoa, Italy

During my Ph.D. I am focusing on various cybersecurity topics. In particular, my interests lay in DevSecOps methodologies, Software Supply Chain security, and the security of containerization.

Software Developer

Talos s.r.l.s.

August 2021 – October 2021 Genoa, Italy

I worked on an extension of Talos' flagship product, Approver. Authentication, encrypted certificate exchange, and user experience are the major topics of my work.

Acquired skills

- Flask framework and Flask SQLalchemy library.
- Docker swarm and stack.
- Python cryptography libraries.
- Springboot java framework.

Software Developer

Humana Vox s.r.l.

February 2020 – July 2020 Genoa, Italy

I worked on an external project in the sanitary domain. The goal was to provide a REST API to acquire data and store them. Moreover a web platform was required to show the data e manipulate them.

Acquired skills

- Web2py framework.
- Customer requests handling.

CTF Competition

Boeing CTF 2018, Genoa

December 2018 Genoa, Italy

I participated in a CTF competition organized by the ZenHack group and sponsored by the Boeing company. The competition was carried out after the training phase with the ZenHackAdemy seminars.

EDUCATION

Ph.D. in Computer Engineering

Dibris, University Of Genoa

November 2021 - Ongoing

I am currently attending the Security, Risk, and Vulnerability Ph.D. I conduct my activities in the Computer Security Laboratory at DIBRIS.

M.Sc. in Computer Science

Dibris, University Of Genoa

October 2019 – July 2021

I attended the "Software and Security Engineering" curriculum that focused on techniques to test and secure software and platforms.

- **Thesis title**: Enabling next-generation cyber ranges with mobile security components;
- **Thesis description**: cyber ranges in the mobile environment are the subject of this research thesis. The lack of mobile technology support is investigated, and the missing features are determined. The proposed solution addresses these qualities by providing appropriate support for technology and cyber exercise players, with a focus on user activity modeling.
- Final degree mark: 110/110 cum laude

ZenHackAdemy

Genoa, Italy

September 2018 – December 2018

Seminars on cybersecurity promoted by the ZenHack team in preparation for the Boeing CTF 2018. These seminars concerned different aspects of cybersecurity such as web security, networking, and binary analysis.

B.Sc. in Computer Science

Dibris, University Of Genoa

October 2016 – July 2019

- **Thesis title**: Application of adversarial machine learning to malware detection;
- **Thesis description**: I used cutting-edge adversarial machine learning techniques to mislead a malware detection neural network. My application focused on Portable Executable files for Windows systems in particular. I was able to effectively illustrate how changing the DOS header can fool the detector into identifying a malicious program as benign without changing its semantic features.
- Final degree mark: 106/110

PUBLICATIONS

Giacomo Benedetti, Luca Verderame, and Alessio Merlo.
"A Preliminary Study of Privilege Life Cycle in Software Management Platform Automation Workflows",
IEEE EuroS&P Workshop on DevSecOps Research and Opportunities 2023 (DevSecOpsRO '23) (accepted, to appear) `http://dx.doi.org/10.2139/ssrn.4385101`
March 2023

Giacomo Benedetti, Luca Verderame, and Alessio Merlo.
"Automatic Security Assessment of GitHub Actions Workflows",
CCS Workshop on Software Supply Chain Offensive Research and Ecosystem Defenses 2022 (SCORED '22)
`https://doi.org/10.1145/3560835.3564554`
November 2022

Giacomo Benedetti, Luca Verderame, and Alessio Merlo.
"Alice in (Software Supply) Chains: Risk Identification and Evaluation",
International Conference on the Quality of Information and Communications Technology (QUATIC '22)
`https://doi.org/10.1007/978-3-031-14179-9_19`
September 2022

TEACHING

Teaching Assistant

Computer Security @ Master Degree in Computer Engineering, University of Genoa
November 2021 – March 2023

Teaching Assistant

Distributed Computing @ Master Degree in Computer Science, University of Genoa
October 2022 – March 2023

PROJECTS

UNAVOX Mobile Scenario

CSec Lab, Unige, Genoa
September 2021

- **Description:** In the context of the UNAVOX project to establish a National Cyber Range, I created a mobile cyber exercise scenario. The scenario was designed to simulate a traditional company network infrastructure. A mobile device with a vulnerable application was connected to the network. As result of this vulnerability the red team was able to gain access to the target machine on the network. This scenario was used to demonstrate how the mobile ecosystem's threats are becoming increasingly significant. Docker was used to deploy the scenario. Many technologies were used to configure the exercise components.
- **Technologies**: Docker, Android Debug Bridge, Shell scripting, OPNSense, Python;

Crowd Control System

Dibris, University of Genoa
December 2020 – February 2021

Project for Internet of Things course;

- **Description:** The goal of the project was to create a crowd management and monitoring system. The system included a web application as well as a mobile application. The backend for both the web and mobile apps was created utilizing Node. The front end was built using the Angular framework, and the mobile app was built using Flask. The backend used MQTT to collect data from Arduino hardware located throughout the Valletta Puggia (Genoa) building.

- **Technologies**: Node, Angular, Flask, MQTT, Arduino,HTML5, Javascript, MySQL;
- **Grade:** 30/30 cum laude.

High availability docker-based site

Dibris, University of Genoa

June 2020 – July 2020

Project for Virtualization & Cloud Computing course;

- **Description:** the project consisted of developing a high availability website deployed in a cluster of interacting nodes through the docker-swarm technology. The cluster of nodes makes available an instance of the Joomla website, replicated among the three nodes to guarantee availability in case of a fault of one node. Furthermore, the database connected to the website was replicated among the three nodes by using the group replication plugin of MySql.
- **Technologies**: docker, docker-swarm, docker-compose, Mysql, Group replication;
- **Grade:** 30/30 cum laude.

DEVELOPMENT SKILLS

- Main Development Languages

Python | C | C++ | JAVA | MATLAB | Rust | LaTex | Javascript | Go

- Development – WEB

PHP | Javascript | HTML / CSS | NodeJS | Flask | Web2Py

- Development Tools – IDE

VS Code | Intellij | PyCharm | Eclipse | WebStorm

- Development Tools – Deploy

Docker | Docker Swarm | Terraform

- Development Tools – DB

PostgreSQL | MySQL | MariaDB | MongoDB

- ML framework

Tensorflow | PyTorch

- Development

Android Programming | Concurrent Programming | REST

- Binary Analysis

Frida | Ghidra | Radare2 | IDA

- Web Security

Burp Suite | ffuf | gobuster | sqlmap | Nikto | Metasploit | Beef | Hashcat | Hydra | Zap Proxy

LANGUAGES

Italian ●●●●●

English (Cambridge FIRST Certification) ●●●○○