Francesco **Marcantoni**

COMPUTER SCIENCE · SOFTWARE ENGINEER

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Summary

Computer Engineering graduate student completing a Master of Science in Computer Science with a double-degree program between Politecnico di Torino in Turin, Italy and the University of Illinois at Chicago in Chicago, IL, USA.

Interest in **Cyber Security** with an academic knowledge of most common threats for computer systems.

Software Engineering background with knowledge of **C** and **Object Oriented** programming. Familiarity with **Linux** and **UNIX-like** operating systems. Basic knowledge of software life cycle and ability to cooperate in work teams.

Education

UIC (University of Illinois at Chicago) — Chicago, IL, USA

MASTER OF SCIENCE IN COMPUTER SCIENCE — *2017 - 2018*

- Enrolled in a **double-degree program** (TOP-UIC) that allows students to study in both universities (UIC and Polytechnic University of Turin) and obtain both the American MSc in Computer Science and the Italian Master degree in Computer Engineering. Course at UIC focusing on **Computer Systems Security** plus **Virtual and Augmented Reality** and **Data Science for Networks**.
- **Master Thesis** research on **Security** and **Privacy** on web browsing from **Android** devices. We studied the exploitation of WebAPI to retrieve information from the sensors of the smartphone when navigating the web. We performed a large-scale study using real Android devices to detect websites accessing data from sensors and we outlined possible attacks to the privacy of the user. Moreover we developed an extension for Firefox for Android to mitigate this issue.

Politecnico di Torino — Turin, Italy

MASTER OF SCIENCE IN SOFTWARE ENGINEERING — *2016 - 2019*

- Course in **Software Engineering** focusing on **Computer Architectures**, **System and Device Programming**, **Network Technologies and Services**, **Database Management Systems**, **Optimization Methods and Algorithms**, **Distributed Programming**, **Formal Languages and Compilers** plus **Development of Large Software** with a focus on software life cycle and working in teams.

Politecnico di Torino — Turin, Italy

BACHELOR OF SCIENCE IN COMPUTER ENGINEERING, 100/110 — *2013 - 2016*

- Undergraduate course in **Engineering** including calculus, physics, chemistry and electronics plus **IT area** including algorithms, low-level coding, object-oriented paradigm, databases and networks.

Liceo Scientifico G. Galilei — Macerata, Italy

SCIENTIFIC LYCEUM DIPLOMA, NATIONAL PLAN OF COMPUTER STUDIES (PNI), 95/100 — *2008 - 2013*

Publications

CONFERENCE PROCEEDINGS

A Large-scale Study on the Risks of the HTML5 WebAPI for Mobile Sensor-based Attacks

F. MARCANTONI, M. DIAMANTARIS, S. IOANNIDIS, J. POLAKIS

30th International World Wide Web Conference, WWW '19, 2019

Work Experience

UCSB (University of California, Santa Barbara) — Santa Barbara, CA, USA

RESEARCH ASSOCIATE — *Oct. 2018 - Present*

- Working as a research assistant for professor Giovanni Vigna at the security lab of University of California, Santa Barbara.
- Research focused on privacy threats for users using popular social networks to authenticate on third-party public services.

Technical Skills

Programming: knowledge of advanced programming in C language including multiprocessing, multithreading, concurrency and TCP/IP socket programming. Academic knowledge of Java8, Python3 and x86 Assembly plus basic knowledge of PHP.
Basic knowledge in developing back-end servers using Flask, SQLAlchemy and PostgreSQL. Experience in building browser **extensions** with an HTML/CSS and JavaScript interface.

Operating Systems: Wide knowledge of **Linux** and **UNIX-like** systems including POSIX, Bash scripting and filesystem acquired through academic courses and daily usage.
Basic comprehensive knowledge of **Android OS** including Android **SDK** and debugging tools as **adb**.

Cyber Security: Familiarity with well known software vulnerabilities and of how they can be exploited to attack systems plus mitigation measures. Knowledge of **malwares** and techniques used to infect computers plus basic knowledge of most common countermeasures (antivirus, IDS, IPS). Comprehension of security issues related to webpages and browsers.

Languages

Italian: native speaker

English: Fluent speaker, certified proficiency (IELTS 7.0)

Academic Projects

Curricular Academic Projects   *Chicago, IL, USA*

University of Illinois at Chicago   *2017 - 2018*

- **Secure Computer Systems** Programming projects involving discovery and exploitation of well known vulnerabilities available in provided software. While vulnerabilities mostly derived by memory safety bugs which had to be found analyzing behavior of software through debugging tools as GDB, the exploits required usage of several techniques including **Control Flow Hijacking**, **Return Oriented Programming** and **Code Reuse Attacks**. Part of projects required **Reverse Engineering** of binaries and basic knowledge of cryptography.
- **Data Science for Networks** *"Detecting Shifts in Propensity Score Stratification when using Relational Classifiers for Network Data"*: we address the problem of reviewing the **Stratified Propensity Score Analysis** used for evaluating the *Average Treatment Effect* in treatment effect observation when we deal with relational data. We proposed a new approach to Propensity Score estimation that makes use of a Relational Classifier and then compare the resulting stratification of the population with one learned by a common classifier, as many times the observed covariates may not be enough to explain the stratification in propensity of the population.
  The work involved researching, usage of the Twitter APIs, and programming in Python and Spark. Most part of the work and the related paper is publicly available on github.
- **Virtual and Augmented Reality** Projects involving development of applications using Unity engine.   Those involved creation of tridimensional environments made for the usage with **HTC Vive headset**.   Interactions with object and environment were developed using **C#** scripts.   Detailed descriptions and source code are available at *gmonna.github.io/InYourRoom* and *gmonna.github.io/HereComesTheSun*.

Curricular Academic Projects and Laboratories   *Turin, Italy*

Politecnico di Torino   *2016 - 2017*

- **Distributed Programming** Laboratory practice in client-server communication through socket programming in C language plus development from scratch of a website to manage online auctions using Javascript and PHP.
- **Optimization Methods and Algorithms** Project based on a real problem with the aim of calculating best routes user should take to move in the city to reach the desired destination while passing through some point of interests. This project involved the usage of several Heuristich and Metaheuristic techniques to find which one was the best trade-off between obtained results and software performances.