

Giacomo Iadarola, Ph.D.

Back-end Software Engineer & AI-Cybersecurity Research Fellow



SHORT BIO

I am a **Back-end Developer** and **Research Fellow** holding a Ph.D. in Computer Science, specializing in **Cybersecurity** and **Deep Learning**. Proficient in **Python**, **Java**, and **Elixir**, I contribute to companies and international research projects. My expertise lies in **Malware Analysis**, Formal Methods, and **Explainable AI** within the realm of deep learning. Currently, I serve as an **Elixir Back-end Developer** at Turn.io, dedicated to advancing company objectives through efficient and scalable code. Passionate about coding, I am committed to projects that benefit the community, whether it involves safeguarding data through research or creating software to enhance people's lives.

EXPERIENCE

TURN.IO | ELIXIR BACK-END DEVELOPER

June 2023 – ongoing | Remote

- I write code to improve the efficiency of the company's operations.
- I work with various frameworks and technologies, including Phoenix Liveview, PostgreSQL, and Tailwind.

INSTITUTE OF INFORMATICS AND TELEMATICS - NATIONAL RESEARCH COUNCIL OF ITALY (CNR) | PH.D. STUDENT AND FULL STACK DEVELOPER

January 2019 – January 2024 | Pisa, Italy

- Research on Malware Analysis, Software Analysis, Mobile security, Smart Contracts Security (Blockchain), e-Health security, and Explainable AI. Develop and test Deep Learning and Formal Methods models for addressing cybersecurity problems.
- Full-stack developer in European projects (C3ISP, Cybersecurity Observatory, CyberSURE, SPARTA, MEDINA).
- Student tutor and supervisor for Master's and Bachelor's thesis/traineeship at the University of Pisa and the University of Molise.

ONAM S.R.L | AI EXPERT AND DL MODEL DEVELOPER

February 2022 – January 2023 | Livorno, Italy

- Python developer and AI expert. Develop an AI module to process and classify images from patient to discover poor body posture, which leads to spinal dysfunction and rounded shoulders.

ITINERA S.R.L | CYBERSECURITY AND PROGRAMMING LANGUAGE TEACHER

May 2021 – October 2021 | Pisa, Italy

- Teacher in two modules: the "Network Security" module within the Cybersecurity course and the "Maintenance and Updating" module within the Java language course. Courses funded by the Tuscany Region Institution.

PERSONAL INFO

LOCATED AT: LIVORNO (LI), ITALY

BIRTH: FEBRUARY 1993

CITIZENSHIP: ITALIAN

SKILLS

PROGRAMMING

Proficient:

Python • Java • Bash • SQL • L^AT_EX

Experienced:

Elixir • C • PHP • Javascript • HTML

Familiar:

Rust • Ocaml

LIBRARIES/Frameworks

Git • Docker • Nginx • Apache2 • MySQL • PostgreSQL • Springboot • Tomcat • Hibernate • RabbitMQ • Apache Drill • Elasticsearch • Kibana • Phoenix LiveView • Tailwind

PLATFORMS/OS

Windows OS • Gnu/Linux OS (desktop/server)

LANGUAGES

ITALIAN

MOTHER TONGUE

ENGLISH

ADVANCE LEVEL (C1)

SOFT SKILLS

- **Communication (writing/speaking):** scientific publications and presentations, lessons in computer science courses, pitch project results/demos, handle meetings and client/investors presentations.
- **Teamwork, Organizational:** able to work as a part of a team, organize virtual meetings, open to criticism and manage conflicts.
- **Problem-solving, Stress and Time management:** critically adapt projects to changes, address problems and deal with deadlines.

RELEVANT PUBLICATIONS AND SCIENTIFIC CONTENTS

- Iadarola, Giacomo, et al. "Towards an interpretable deep learning model for mobile malware detection and family identification." Computers & Security 105 (2021): 102198. | JOURNAL - RANK Q1
- Iadarola, Giacomo, et al. "A Semi-Automated Explainability-Driven Approach for Malware Analysis through Deep Learning." 2021 International Joint Conference on Neural Networks (IJCNN). IEEE, 2021. | CONFERENCE - RANK A
- Gerardi, Federico, et al. "Perturbation of Image-based Malware Detection with Small level morphing techniques." 2021 IEEE ISPA. | CONFERENCE
- Errica, Federico, et al. "Robust Malware Classification via Deep Graph Networks on Call Graph Topologies." 2021 ESANN. | CONFERENCE
- Iadarola, Giacomo, et al. "Formal methods for android banking malware analysis and detection." 2019 Sixth International Conference on Internet of Things: Systems, Management and Security (IOTSMS). IEEE, 2019. | CONFERENCE
- Iadarola, Giacomo. Graph-based classification for detecting instances of bug patterns. Technical University of Darmstadt, 2018. | MASTER'S DEGREE THESIS

PROJECTS

REPRESENTATION AND DETECTION OF MALWARE FAMILIES USING EXPLAINABLE APPROACHES | L^AT_EX

PH.D. THESIS - [HTTPS://ETD.ADM.UNIPI.IT/THESES/AVAILABLE/ETD-02132023-170912/UNRESTRICTED/IADAROLA_PHDTHESIS.PDF](https://etd.adm.uniipi.it/theses/available/etd-02132023-170912/unrestricted/IADAROLA_PHDTHESIS.PDF)
Oct 2019 - Feb 2023

- Malware represented as graphs and images, and deep learning and model-checking techniques are tested to distinguish between malware families. The goal is to develop a malware detector that makes output predictions easily interpretable by humans.

TOOL FOR ANALYZING MALWARE REPRESENTED AS IMAGES (TAMI) | PYTHON

[HTTPS://GITHUB.COM/DJACK1010/TAMI](https://github.com/DJACK1010/TAMI)
May 2020 - ongoing

- It gathers the code, tools, approaches, and experiments presented in most of my publications.

E-CORRIDOR - EUROPEAN PROJECT | JAVA • PYTHON • JAVASCRIPT • HTML • DOCKER • ELASTICSEARCH • KIBANA

[HTTPS://E-CORRIDOR.EU/](https://e-corridor.eu/)
January 2022 - ongoing

- I am the technical leader of Work Package 4, on behalf of the IIT-CNR. We develop web services and a web platform to analyze data coming from transportation sectors (automotive, railway and airports) and detect vulnerabilities and threats.

EDUCATION

UNIVERSITY OF PISA

DOCTORATE
Oct 2019 - Feb 2023 | Pisa, Italy
Computer Science

CARNEGIE MELLON UNIVERSITY

VISITING-PH.D. STUDENT
March - May 2022 | Pittsburgh (PA), USA
Cybersecurity

TECHNISCHE UNIVERSITÄT DARMSTADT

MASTER OF SCIENCE DEGREE
Oct 2017 - Oct 2018 | Darmstadt, Germany
Security and Privacy

UNIVERSITY OF TWENTE

MASTER OF SCIENCE DEGREE
Aug 2016 - Oct 2017 | Enschede, The Netherlands
Security and Privacy

UNIVERSITY OF PISA

BACHELOR DEGREE
Sept 2012 - Jul 2016 | Pisa, Italy
Computer Science

UNIVERSITY OF STIRLING

ERASMUS+ PROJECT
Aug 2014 - Jun 2015 | Stirling, Scotland
Computer Science

RESEARCH

- JOURNALS: 5+
- PAPERS: 25+
- BOOK CHAPTERS: 1
- CITATIONS: 200+
- H-INDEX: 8
- I10-INDEX: 7
- SCIENTIFIC PEER-REVIEWS: 30+
- TEACHING: 50+ HOURS
- CO-ADVISOR: 10+ THESIS

REFERENCES

Fabio Martinelli, Research Director, Institute of Informatics and Telematics (CNR)

✉ fabio.martinelli@iit.cnr.it

CYBERSURE – EUROPEAN PROJECT | JAVA • PYTHON • JAVASCRIPT • HTML

[HTTPS://CORDIS.EUROPA.EU/PROJECT/ID/734815](https://cordis.europa.eu/project/id/734815)

September 2019 - December 2021

- I contribute to the project as a main developer of the IIT-CNR web services, and for handling technical communications with partners.

CYBERSECURITY OBSERVATORY - WEBSITE | JAVA • PYTHON • JAVASCRIPT • HTML

[HTTPS://CYBERSECURITYOSSERVATORIO.IT](https://cybersecurityosservatorio.it)

April 2019 - February 2023

- I contribute to the website as a programmer (back-end developer), developing web services, handling collaborations, and presenting the website in public events to raise awareness on cybersecurity.

GRAPH-BASED CLASSIFICATION FOR DETECTING INSTANCES OF BUG PATTERNS | JAVA • BASH • L^AT_EX

MASTER THESIS - [HTTPS://GITHUB.COM/DJACK1010/GRAPPA](https://github.com/DJACK1010/GRAPPA) & [HTTPS://GITHUB.COM/DJACK1010/GRAPH4APK](https://github.com/DJACK1010/GRAPH4APK)

April 2018 - October 2018

- I developed a novel approach, and a tool (available on Github), to automatically detect bugs in source code without any prior-knowledge on the code itself.

EFFICIENCY IN TRAINING USERS FOR SAFER PASSWORDS | HTML • JAVASCRIPT

STUDENT RESEARCH

April 2017 - July 2017

- Research Question: “To what extent does a training on internet users affect their behavior in choosing safer and easy-to-remember passwords?”. The research was conducted via a website that we developed for this purpose. We wrote a short essay to report the result obtained

FUZZING NANOSVG AND SDB | PYTHON

TESTING PROJECT

April 2017

- Assignment for the course “Software Testing and Reverse Engineering” for TU Delft. We fuzzed some open source project to find bugs and patch them. We patched several bugs and got an excellent mark for our work.

“GHOST CODE”

START-UP PLAN

January 2017 - March 2017

- Startup project for the “Innovation and Entrepreneurship” exam at the University of Twente. Together with my team, we developed a complete business canvas and business plan for our project start up “Ghost Code”, company based on steganography techniques and augmented reality. The work lasted 3 months and it ended up with a pitch and poster session.

“RETI RESEVOIR COMPUTING PER L'APPRENDIMENTO DEL CONSUMO CALORICO SULLA BASE DELLA FREQUENZA CARDIACA” | JAVA • BASH • L^AT_EX

BACHELOR THESIS

July 2016

- The Neural Networks were the main topic of my thesis. I worked with the researchers of the Computer Science department at the University of Pisa, collecting and analysing data. I applied an Echo State Network to estimate the daily burned calories, using the heart rate tracked by a wristband as input parameter.

SAVE THE TREES | JAVA

VIDEOGAME

May 2015

- Videogame written in Java for the “Computer games” exam at the University of Stirling. The videogame placed 2nd in a game-design competition of the Scottish Minister for Natural Environment.

ACHIEVEMENTS/AWARDS

Nov 2022	Junior Professional Engineer	Legally recognized as Junior Professional Engineer in the Information Technology field (completed the state exam).
Sept 2022	Best Paper FARES 2022	Scientific paper was selected among the best papers of the international workshop, and invited to extend the work to a journal publications
Nov 2018	EIT Label Certificate	EIT Digital Master School Programme in Security and Privacy, accredited by the European Institute of Innovation and Technology
Aug 2017	Big Data Analytics Certificate	Awarded by EIT Digital Academy, 2 weeks Summer school in Stockholm
May 2015	2nd Place Code competition	"Gamification for plant health" game-design competition, sponsored by fera.co.uk and scotland.forestry.gov.uk
May 2014	TSSA Certificate	Transporto Sanitario Soccorso Ambulanza, International Red Cross and Red Crescent Movement

INTERESTS

I enjoy most of my free time outdoors. I love activities like riding my road bike, running, hiking, and playing futsal and basketball.

I have a passion for traveling, exploring new places, and experiencing different cultures and meeting new people. I am particularly drawn to the lifestyle of smaller to medium-sized countries and cities, preferably in warm climates near the sea. I'm a big fan of remote work that allows me to combine work and exploration seamlessly.

When I'm at home, I like to spend my free time reading classical novels and historical fiction. I also work on computer science side-projects, which may involve learning a new programming language or developing something on my Raspberry Pi.

Additionally, I am a novice bass player who enjoys playing and listening to rock, prog, and funky music.

I proudly support my hometown's (Livorno) soccer and basketball sports teams.