

Francesco Medina

Turin, Italy

Software Engineer

7+ YEARS OF PROFESSIONAL EXPERIENCE

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EDUCATION

- Master of Science in Computer Engineering - Software** 2020-24
Politecnico di Torino, #52 QS WORLD RANKING IN ENGINEERING & TECHNOLOGY, 2024 CGPA: 3.78/4.00
 - Highest score** awarded for Master's Thesis: *Analysis and Contributions to a Post-Quantum Cryptography Library written in Rust for an ARM Cortex-M4 Board*
- Bachelor of Science in Computer Engineering** 2013-2020
Politecnico di Torino - Turin, Italy CGPA: 3.10/4.00

PUBLICATIONS

- F. Medina**, M. C. Molteni, A. J. Di Scala and L. Nava, *Analysis and contributions to an open source Kyber library in Rust* **IEEE Symposium on Computers and Communications (ISCC)** presented in Paris, France, 2024
DOI: 10.1109/ISCC61673.2024.10733712.
- F. Medina**, *Analysis and Contributions to a Post-Quantum Cryptography Library written in Rust for a ARM Cortex-M4 board* **Politecnico di Torino** Turin, Italy, 2024

INDUSTRY EXPERIENCE

- System Manager, ERICSSON** May 2023 - Present
RANKED #1 GLOBALLY IN THE FROST RADAR FOR 5G, 2024 Genoa, Italy
 - Conducted security analyses aligned with architectural and technological strategies, translating software specifications into actionable designs and supporting design teams.
 - Developed proofs-of-concept for strategic studies, evaluated third-party software, and validated cutting-edge architectures and tools.
 - Worked on cloud-native microservices, contributed to innovative solutions, patents, white papers, and standards reviews.
- Software Engineer, COOLSHOP SRL** Sep 2017 - Nov 2022
FINANTIAL TIMES, 1000 EUROPE'S FASTEST GROWING COMPANIES, 2021 Turin, Italy
 - Led the development of critical projects, managing frontend and backend tasks with PHP, JavaScript (Node.js, React, GraphQL), Java, and deploying microservices. Technologies used: Docker, Gitlab pipelines, CouchDB, MongoDB.
 - Directed project planning, created technical designs, and ensured timely delivery of solutions while coordinating Agile workflows with Jira.
 - Introduced Rust programming language to the company, driving knowledge sharing and collaborative growth.

RESEARCH EXPERIENCE

- Research & Development, ERICSSON** Sep - Nov 2024
 - Contributed to the development of a functional prototype based on a patented idea from our team, titled *Dynamic Application Vulnerable Use Cases Identification in a Cloud Native* (WO2024047385A1)
 - Participated in the design and implementation a multi-agent AI systems
- Post-Quantum Cryptography Research, Security Pattern, Internship** Sep 2022 - Mar 2024
 - Evaluated the feasibility and efficiency of integrating post-quantum cryptographic algorithms with ARM Cortex M4 microcontrollers to enhance security against quantum threats. Contributed to the improvement of the Post-Quantum Cryptography ML-KEM library, delivering enhancements in code quality and maturity

PRESENTATIONS

- Speech (1 hour)** - ERICSSON WEBINAR: FOSS MANAGEMENT AND SECURITY November 2024
- Speech (20 minutes)** - 1ST WORKSHOP ON QUANTUM-SECURE NETWORKS AND SYSTEMS (QSNS2024) June 2024
- Speech (1 hour, 30 minutes)** - COOLACADEMY: RUST AND WEBASSEMBLY September 2022
- Speech (50 minutes)** - COOLACADEMY: CLOUD COMPUTING February 2021
- Presentation (30 minutes)** - CONNECTION LAB AND INNOVATION KITCHEN - LAB ASSISTANT December 2017
- Presentation (30 minutes)** - STARTUPPATO | INNOVATING BY NETWORKING November 2017
- Presentation (1 hour)** - AMBIENT INTELLIGENCE SHOWCASE - HEALTH AND WELLBEING EDITION October 2016

ACADEMIC PROJECTS & AWARDS

• IEEE - HKN Hello Bot The Hackathon

3TH PLACE - TOTAL €500

- Developed a system to schedule appointments based on voice messages sent via Telegram. Designed the solution to process voice input, extract key details, and automatically create calendar events through seamless integration with external APIs.
- Backend in Node.js, Python, and SQLite, with Google APIs for speech-to-text and calendar management, and AWS services for cloud computing and storage.

• Natural Language Processing - Discourse Processing Assignment

HIGHEST SCORE AWARDED, TOP 1-2% OF THE CLASS - FORMAL LANGUAGES AND COMPILERS COURSE

- Conducted an in-depth analysis of discourse processing, focusing on coreference resolution and discourse coherence. Implemented algorithms in Python to process and analyze textual data, enhancing understanding of natural language structures.
- Python, NLTK, NLP Theory, Formal Languages

• Task Scheduler Application

TOP GRADE WITH HONOURS - WEB APPLICATION I COURSE

- Developed a Kanban board application using React.js, HTML, CSS, and JavaScript. The project emphasizes task management and workflow visualization, providing users with an interactive interface to track project progress.

• Distributed and Transactional eCommerce Service

WEB APPLICATION II COURSE

- Developed a distributed and transactional eCommerce platform. Implemented the Saga Pattern (Choreography approach) and integrated Kafka for efficient communication between microservices, ensuring data consistency and reliability.
- Microservices, Kotlin, MongoDB, Docker, Saga Pattern (Choreography), Spring Boot, Apache Kafka

• Solidarity Purchasing Group

SOFTWARE ENGINEERING II COURSE

- Engineered a web application for a Solidarity Purchasing Group using Node.js, Sequelize, and Docker. Employed Agile-SCRUM methodology to manage the development process, incorporating SonarQube and Polaris for code quality and security analysis.

• NICE Bins Project

AMBIENT INTELLIGENCE COURSE

- Designed and implemented an intelligent waste management system aimed at simplifying and gamifying waste classification for residents. Utilized Arduino, Raspberry Pi, proximity/ultrasound sensors, and developed an Android application in Java to facilitate user interaction and provide real-time notifications of waste disposal status.

• Car Pooling Mobile Application

MOBILE APPLICATION DEVELOPMENT COURSE

- Created a mobile application using Android Studio and Kotlin, integrated with Firebase for backend services. The app enables users to coordinate carpooling arrangements, promoting efficient and eco-friendly transportation solutions.

VOLUNTEER WORK

IT Mentor, EsPerTo No-Profit Association - Italy

June 2016 - December 2017

To support international students applying to Italian universities through academic support courses, I created the association's 2017 webpage using PHP, SQL, WordPress, and CloudFlare.

REFERENCES

Dr. Antonio Josè Di Scala

- Full Professor Department of Mathematical Sciences

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Dr. Stefano Scanzio

- Senior Researcher at CNR-IEIIT and Professor at Politecnico di Torino

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Dr. Maurizio Morisio

- Full Professor Department of Control and Computer Engineering

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