Marco Romano

MSc in Quantum Information Physics • Software Engineering • Cambridge, UK

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Professional Summary

I am a Software Engineer with an MSc in Quantum Information Physics and a strong foundation in computational research. My career began with a fascination for unraveling complex systems, which cultivated my ability to analyze intricate problems and design robust, data-driven solutions. By merging my scientific expertise with software engineering, I have focused on backend enterprise application development—translating theoretical knowledge into maintainable, production-grade systems. My work emphasizes technical precision, optimizing workflows through data analysis, and building scalable architectures to solve organizational challenges. I thrive in collaborative, interdisciplinary environments, where I work closely with professionals from varied disciplines to bridge technical and creative perspectives, fostering innovation that delivers measurable results. Currently, I am seeking a role where I can leverage my technical proficiency and research-driven mindset to contribute to high-impact software and infrastructural solutions and empower innovations at the intersection of technology and research.

Skills

Technical Skills

- **Computing**: C, Python, Fourier Analysis, Numerical Simulations, Integration Algorithms
- **Software Development**: Java, Groovy, Go, SQL, HTML, Spring Boot, REST APIs, Apache Tomcat
- **Data Analysis and Machine Learning**: Python (NumPy, Pandas, SciPy, scikit-Learn), statistical modelling, Decision Trees, Naïve Bayes, KNN, Random Forest, Gradient Boosting, Principal Component Analysis
- **DevOps and Infrastructure**: Linux, Bash scripting, Docker, Git, Jenkins, on-premises deployment tools

Soft Skills

- Fast learning attitude, problem-solving, interdisciplinary collaboration, mentoring, stakeholder engagement
- Languages: Italian (Native), English (Proficient – C1 SELT Certified)

Work Experience

IT Consultant, Software Engineer – DS Group S.p.A**.** for Sky Italia S.r.l. **FEBRUARY 2019 – DECEMBER 2024**

- Developed and optimized Java Spring Boot applications running on Red Hat Enterprise Linux and Apache Tomcat, handling enterprise-scale RESTful communication.
- Engineered IVR flows with Groovy scripting, processing 60,000+ calls per day, improving automation and efficiency.
- Led integration of Sky WiFi, Sky Glass, and Sky Mobile services into client's IVR systems, managing over 1 million additional users.
- Designed and developed a Java-based unit testing framework for parallel load testing, improving development efficiency.
- Conducted extensive system optimization, reducing memory usage by 80% and resolving critical security issues.
- Reengineered customer experience with SQL-based dynamic lookup tables, enhancing efficiency and scalability.
- Maintained comprehensive technical documentation, fostering clear communication with stakeholders and ensuring smooth team workflows.

Research and Tutoring Experience

MSc Thesis in Quantum Information Physics – University of Rome La Sapienza **FEBRUARY 2018 – NOVEMBER 2018**

- Carried out a 9-month experimental MSc thesis project on boson sampling and quantum optics at the QuantumLab of the Physics Department at Sapienza University of Rome, under the guidance of Prof. Fabio Sciarrino, Dr. Nicolò Spagnolo and Dr. Niko Viggianiello, using Python for data analysis and visualization.
- Published research findings in the **New Journal of Physics** on "Experimental quantification of four-photon indistinguishability" (DOI: 10.1088/1367-2630/ab7a30).

Circuitry and Signals Laboratory Tutor – University of Rome La Sapienza **OCTOBER 2016 – JANUARY 2017**

- Provided tutoring and guidance to undergraduate students in the Circuitry and Signals Laboratory of the Physics Department at Sapienza University of Rome.
- Assisted students in understanding circuit design, signal processing techniques, and experimental setups.
- Supported faculty in preparing teaching materials and ensuring smooth lab operations.

Education

Bootcamp in Data Science and Machine Learning – Neural Academy – 2023

- Python libraries for data analysis, such as NumPy, Pandas and scikit-learn.
- Regression and clustering models, such as Decision Trees, Naive Bayes, KNN, Random Forest, and Gradient Boosting, and Principal Component Analysis techniques.

Master of Science in Quantum Information Physics – University of Rome La Sapienza – Grade 2:1 – 2018

- Main areas of study: complex systems; solid state physics; quantum optics and information.
- Experimental and computational research in boson sampling and quantum optics.
- Numerical and integration simulations in C and data analysis in Python.

Bachelor of Science in Physics – University of Rome La Sapienza – Grade 1st class – 2015

- Main areas of study: vectorial analysis, differential equations and linear algebra; statistical methods and Fourier analysis; electromagnetism, wave mechanics and signal processing; C and R programming for computational physics.
- Explored algorithms for Monte Carlo simulations and regression models for analysing experimental data, and integration algorithms such as Euler, Verlet, and Runge-Kutta for physics simulations.
- Utilized Linux environments for computational simulations and data processing.

Certifications

- **C1 SELT Certification** – 2024
- **Introduction to Go –** JetBrains Academy – 2024
- **Java Backend Developer (Spring Boot) –** JetBrains Academy – 2024
- **Java Full Stack Developer –** JetBrains Academy – 2024
- **Data Science and Machine Learning –** Neural Academy – 2023
- **Java Full-Stack Development –** Formatemp – 2019