

Nicolò Giacomini

Computer Engineer & Researcher

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🌐 Personal Website (nicologiacomini.me)

GitHub

Professional Summary

Computer Engineer specializing in distributed systems and High-Performance Computing (HPC). Holds a Master's degree in Innovation and Research in Informatics from UPC. Currently working full-time as a Research Engineer at the Barcelona Supercomputing Center, focusing on metadata capture, provenance workflows, and advanced knowledge extraction. Strong background in Python development, open-source contribution, and machine learning integrations for HPC environments.

Education

- 2023–2026 **Master's Degree in Innovation and Research in Informatics**, *Universitat Politècnica de Catalunya (UPC)*, Barcelona, Spain.
Specialization: Computer Networks and Distributed Systems
Graduation: January 2026
Thesis: Metadata capture, knowledge extraction, and predictive analysis for HPC workflows
- January - **Exchange Student (Erasmus+)**, *Norwegian University of Science and Technology (NTNU)*,
June 2025 Trondheim, Norway.
Relevant Coursework: Advanced Software Engineering, Real-Time Programming, Applied Cryptography and Network Security
- 2018–2023 **Bachelor's Degree in Computer Engineering**, *University of Brescia*, Brescia, Italy.
Thesis: Algorithms and Consensus Protocols in Distributed Systems
Graduation: March 2023

Professional Experience

- 2024–present **Research Engineer**, *Barcelona Supercomputing Center (BSC)*, Barcelona, Spain.
- Engineer metadata capture solutions for High-Performance Computing (HPC) and distributed computing environments.
 - Implement provenance workflows utilizing the COMPSs framework to enhance experiment reproducibility, traceability, and machine learning predictions.
 - Drive research initiatives focused on experiment governance and advanced knowledge extraction in HPC settings.
 - Collaborate cross-functionally with international research teams to design and deploy innovative computational tools.
- January - **Computer Science & Physics Teacher**, *Giovanni Paolo II Institute*, Brescia, Italy.
June 2023
- Instructed comprehensive Computer Science and Physics courses for high school students across grades 9-12.
 - Designed and deployed custom curriculum materials, lab exercises, and assessment frameworks for complex technical subjects.
- June - **Software Development Intern**, *Halless srl*, Brescia, Italy.
August 2017
- Built and deployed IoT solutions utilizing Raspberry Pi infrastructure for remote data collection and transmission.
 - Programmed embedded system firmware using C/C++.
 - Executed project deliverables utilizing Agile methodologies within a collaborative development team.

Technical Skills

Programming	Python, Bash, Java, C/C++
HPC & Distributed	COMPSs, OpenMP, MPI, CUDA, Slurm, cgroup
Cloud & DevOps	Docker, Kubernetes, AWS, Git, Linux Administration, CI/CD
AI & Data Science	PyTorch, Scikit-learn, NumPy, SciPy, Hugging Face, LLM integrations
Backend & Web	FastAPI, REST APIs, SPARQL, RDF, React, Tailwind

Open Source Contributions (Merged PR)

- 2025 **Provenance Storage:** Implement CORS middleware and add webapp example. Introducing a React webapp and edit API CORS permissions.
- 2025 **Provenance Storage:** Add API unit tests. Add unit tests for previously implemented FastAPI.
- 2025 **Provenance Storage:** Decoupled CLI from database by introducing FastAPI service. Improved modularity, scalability, and enabled REST API integration.
- 2025 **ro-terms:** Updated COMPSs vocabulary.csv. Contributed to the standardization of research object terms.
- 2024 **Pygments:** Added 'revert' keyword support. Extended syntax highlighting for SQL.
- 2024 **Pygments:** Added new C# keywords. Ensured up-to-date language support in a widely used syntax highlighter.

Projects & Activities

- 2025 **DevOps Professional Development:** Completed DevOps course covering CI/CD, containerization, and cloud deployment strategies
- 2024 **Personal Portfolio Website:** Developed and deployed nicologiacomini.me to showcase technical projects and research work
- 2024 **HackUPC Participant:** Competed in the UPC hackathon in Barcelona, developing innovative solutions under time constraints
- 2023 **Freelance Developer:** Developed some Python and Flutter projects as independent contractor
- 2021 **IEEEExtreme Programming Competition:** Achieved 252nd place globally out of 2000+ participants in the prestigious 24-hour programming challenge
- 2019–2023 **IEEE Student Branch Member:** Active participant in professional development activities and technical workshops at University of Brescia
- 2018–2023 **Tutor and study assistant:** Provided individual and group tutoring sessions for high school and university students. Specialized in mathematics, computer science, and engineering subjects

Languages

Italian	Native Speaker	<i>Full professional proficiency</i>
English	B2 Certified (Upper-Intermediate)	<i>Fluent in academic and professional contexts</i>
Spanish	B2 (Intermediate)	<i>Conversational proficiency, improving through immersion</i>