Eugenio Marinelli

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Education

PhD in Computer Science, *Sorbonne University* – Biot, France — Mar 2021 - Jun 2024
MSc in Computer Engineering, *Polytechnic University of Turin* – Turin, Italy. GPA: 4.0/4.0 (Hons) — Oct 2018 - Dec 2021
MSc in Data Science and Engineering, *Télécom Paris* – Paris, France — Feb 2019 - Jul 2021
BSc in Computer Engineering, *Polytechnic University of Turin* – Turin, Italy. GPA: 4.0/4.0 — Oct 2015 - Jul 2018

Experience

Senior Software Engineer, EURECOM – Biot, France — Mar 2024 – Apr 2026

- Leading development of **SYCL-GAL**, a cross-platform, GPU-accelerated genome analysis pipeline in modern **C++** using SYCL and CUDA, with emphasis on software architecture, maintainability, and performance across CPU and GPU platforms.
- Designed system architecture, core data structures, and execution pipeline; worked across implementation, debugging, profiling, and optimization of a large multi-component codebase.
- Coordinated work across a small team focusing on I/O and GPU optimization, aligning implementation work and integrating contributions into a unified system.
- Improved end-to-end performance by up to 12x over the Java-based baseline while preserving correctness and portability.

Doctoral Researcher / Software Engineer, Sorbonne University – Biot, France — Mar 2021 – Jun 2024

- Designed and implemented multiple high-performance software systems in **C++**, including portable CPU/GPU components, custom data structures, and data-processing pipelines for large-scale applications.
- Built CMOSS, a reliable molecular storage pipeline with block-level random access and integrated decoding, requiring careful architectural design and end-to-end system integration.
- Developed OneJoin, a cross-architecture similarity-join engine using Intel oneAPI/DPC++, and implemented XJoin, a portable database parallel hash join across heterogeneous hardware.
- Debugged complex correctness and performance issues across unfamiliar and evolving code, hardware targets, and software stacks; collaborated with researchers from different domains to deliver production-quality prototypes.

Teaching Assistant, EURECOM – Biot, France — Sept 2021 – Aug 2024

- Led tutorial sessions and evaluated assignments for Distributed Systems and Cloud Computing, helping students reason about software design, debugging, and large-scale systems.

Summer Student (ROOT Team), CERN – Geneva, Switzerland — Jun 2022 – Sept 2022

- Developed a zero-copy data merge algorithm in C++ for ROOT RNTuple data structures, contributing to a large existing codebase used in production scientific software.
- Worked within an established team, understanding and extending unfamiliar code while ensuring compatibility and performance.

Projects

Real-Time Collaborative Text Editor — C++, Qt, client/server systems

- Built a collaborative editor with a custom client/server architecture, focusing on correctness, synchronization, and responsive UI behavior.
- Designed conflict-tolerant editing logic for ordered concurrent operations and debugged distributed state-management issues.

Selected Publications

- **Marinelli et al.** *CMOSS: A reliable, motif-based columnar molecular storage system*. **SYSTOR 2024**.
- **Marinelli et al.** *OneJoin: Cross-architecture, scalable edit similarity join for DNA data storage using oneAPI*. **VLDB 2021**.
- **Marinelli et al.** *XJoin: Portable, parallel hash join across diverse XPU architectures with oneAPI*. **SIGMOD-PODS 2021**.