Borja Castellano

Backend & Systems Software Engineer and Mathematician

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Github • Portfolio • LeetCode • LinkedIn

Summary

Systems and Backend Software Engineer with strong foundations in mathematics. Experienced in **Rust, C/C++, Java**, HPC, parallel computing, and backend systems. Proven track record delivering **production-ready solutions**, optimizing performance, and leading **open-source projects**. Passionate about problem-solving, high-performance computing, and building reliable, scalable, readable software.

Work Experience

Blockchain SDK & Infrastructure Engineer | *Dash Core Group* | *Current Position* | *Org Github*
- Designed, developed, and maintained the Rust SDK and SPV client for the Dash Core and Platform blockchains, along with the FFI bindings and its Kotlin and Swift SDK wrappers.
- Developed Zero Knowledge Proofs (ZKP) algorithms for transactions privacy.

HPC Software Engineer | *CESGA* | *04/2025 – 07/2025*
- Designed, developed, and parallelized HPC algorithms using **MPI, CUDA, and OpenMP** on Finisterrae III for research in uncertainty quantification.
- Improved algorithm performance by **up to 95%**.
- Contributed to large-scale codebases in **MATLAB, Fortran, C, C++, Rust, and Python**.
- Delivered production-ready software and collaborated closely with researchers from CSIC.

Freelance | *08/2024 – 04/2025*
- Designed and developed cross-platform desktop applications using **Java/JavaFX**.
- Deployed and maintained **REST APIs and backend systems** using Docker, Rust (Actix, Rocket), Java (Spring, Hibernate), ensuring high availability and reliability.
- Designed **TCP/IP communication protocols** to optimize intranet communications.
- Implemented **automated tests and CI/CD pipelines** to ensure code quality and robustness.

Open Source

Aria | Repository | Active maintainer
Rust-based interpreted **scripting language** focused on code safety. Responsible for performance optimization, test maintenance, and feature development for both the language and its VM.

fee | Repository | Creator and maintainer
Fast and flexible library for evaluating **mathematical expressions from strings**, optimized for runtime performance and simplicity. Currently the **fastest in crates.io**.

cuqdyn-c | Repository | Creator and maintainer
Rust/C project for **uncertainty quantification in dynamic biological models** based on conformal prediction techniques. Simulates ODE-based biological processes, performs parameter inference, and generates statistically robust confidence bounds. Includes CLI, parallel execution support (**MPI/OpenMP**), and automated model compilation from XML-defined expressions.

Education

- **B.Sc. in Mathematics**, University of Santiago de Compostela, 2018–2022, GPA 3.3/4.0
- **B.Sc. in Software Engineering**, IES Chan do Monte, 2023–2025, GPA 4.0/4.0 – Highest Honors