

Rui Marques

Senior C++ Compiler Engineer

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PROFESSIONAL SUMMARY

Senior C++ Compiler Engineer with **8 years of experience**, specializing in **Compiler Technology**, **Static Analysis**, and **Deep Learning**. Proven track record of optimizing performance by up to 100x and developing tooling used by major industry players (Microsoft, Intel, NERSC). Strong background in Engineering Physics with expertise in modern C++, LLVM, and high-performance computing.

TECHNICAL SKILLS

- **Languages:** C++ (Expert), C, Fortran, Python, Bash, SQL, Rust, Groovy, TypeScript.
- **Compiler & Build:** LLVM (Clang, Flang, IR, MLIR), GCC, CMake, Ninja.
- **HPC & Parallelism:** OpenMP, OpenACC, SIMD, x86_64, ARM64, WebAssembly.
- **Frameworks & Libraries:** TensorFlow, OpenCV, FFmpeg, Boost.
- **Tools & Environment:** Git, Docker, CI/CD (Jenkins, GitHub Actions), Linux (Arch), Neovim, Tmux.
- **Methodologies:** Agile, TDD, Clean Code, Git-Flow.

WORK EXPERIENCE

Senior C++ Compiler Engineer | [Codee](#)
Remote / A Coruña, Spain (2020 – Present)

- Core developer of a static code analysis tool (~200k LOC) focused on **correctness, security, and performance optimization** for HPC workloads.
- **MLIR & Flang:** Leveraged MLIR within the Flang frontend to optimize and transform Fortran Intermediate Representation (FIR), implementing custom lowering passes to LLVM-IR.
- **System Design:** Architected an **Incremental Analysis** engine and a **Build Dependency Reverse Engineer** designed from first principles, drastically reducing re-analysis time.
- **Impact:** Designed and implemented key diagnostics and auto-remediation features that directly drove revenue growth and adoption by high-profile clients including **Oak Ridge National Laboratory, NERSC, Microsoft, Intel, and Fujitsu**.
- **Open Source:** Upstreamed contributions to [LLVM](#) (Clang, Flang), [Bear](#), and [tree-sitter-fortran](#).
- **Engineering Practices:** Promoted modern C++ standards and best practices (TDD, Code Reviews) within a high-performance Agile team.

C++ Deep Learning Software Engineer | [Cinfo](#)
A Coruña, Spain (2019 – 2020)

- Built an **AI-driven autonomous broadcasting system** for sports events, utilizing Computer Vision to automate camera control.
- **Optimization:** Enhanced system reliability by implementing an advanced Kalman Filter for robust object tracking.
- Managed end-to-end ML pipelines: dataset curation, training, and fine-tuning of CNNs on GPU clusters.

C++ Deep Learning Software Engineer | [Xesol Innovation](#)
Vigo, Spain (2018 – 2019)

- Developed real-time **Advanced Driver-Assistance Systems (ADAS)**, including traffic sign recognition, collision detection, and lane keeping.
- **Performance:** Achieved a **100x performance boost** (3 to 300 FPS) on embedded hardware through algorithmic optimization.
- Implemented and deployed deep learning models (CNNs) for object detection in resource-constrained environments.

Junior C++ Software Engineer | [CTAG - Automotive Technology Centre of Galicia](#)
Porriño, Spain (Jan 2018 – Apr 2018)

- Developed embedded drivers for **LiDAR and ultrasound sensors** adhering to strict automotive safety standards (**MISRA-C**).

EDUCATION

- **M.Sc. in Theoretical Physics** (Incomplete) | [Instituto Superior Técnico](#)
 - 2015 – 2017 | Completed 2 years of coursework. Research focus: Massive Graviton Theories.
- **B.Sc. in Engineering Physics** | [Instituto Superior Técnico](#)
 - 2012 – 2015

LANGUAGES

- **English:** Proficient
- **Spanish:** Proficient
- **Portuguese:** Native