

GUILHERME I. GONÇALVES

Senior Full-Stack Software Engineer

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EXPERIENCE

Senior Full-Stack Software Engineer

Prime IT

- Feb 2022 – Present Remote – Lisbon, Portugal
- Works as a Full-Stack Software Engineer contractor at Siteimprove, a global Software-as-a-Service (SaaS) company, contributing to the design and evolution of large-scale, cloud-based software systems.
 - Designs, implements, and maintains distributed back-end services in **Java (Spring Boot)**, as well as in **C# (ASP.NET)** and **Node.js (Express)**, exposing RESTful APIs consumed by multiple client applications.
 - Develops front-end applications and shared libraries using **JavaScript/TypeScript** and **React**, with strong focus on code quality, reusability, and long-term maintainability.
 - Leads the development and maintenance of the **Fancy Design System**, a scalable **React**-based component library, ensuring UI consistency, accessibility compliance (**WAI-ARIA**), and reliable integration across several products.
 - Contributes to the architecture and operation of cloud-native systems deployed on **AWS**, working with services such as **DynamoDB**, **CloudFront**, **ElastiCache**, and **Redis**, with emphasis on scalability, performance, and reliability.
 - Works with both **SQL** and **NoSQL** data stores, including **Oracle (SQL)** and **AWS DynamoDB**, selecting appropriate persistence strategies according to system requirements.
 - Implements authentication and authorization mechanisms based on **OAuth 2.0** and **OpenID Connect** for distributed services and web applications.
 - Actively participates in agile development within international teams, contributing to technical discussions, code reviews, sprint planning, and continuous improvement following the **SCRUM** framework.

User & Scientific Researcher

CERN – European Organization for Nuclear Research

- Mar 2019 – Present Geneva, Switzerland
- Worked on-site from 2019 to 2020 designing and implementing advanced **energy reconstruction algorithms** for the ATLAS Tile Calorimeter within the **Athena** software framework, targeting high pile-up conditions at the **Large Hadron Collider**.
 - Contributed to the maintenance and upgrade of the Tile Muon Digitizer Board software during the **Long Shutdown 2 (LS2)**, ensuring compatibility with upgraded detector electronics.
 - Returned on-site in 2021 for a short mission to design and implement a **machine learning**-based energy estimation tool using **C++** and **Python**, fully integrated into Athena workflows.
 - Worked remotely as a **Data Quality Validator**, analyzing detector data integrity and software reconstruction outputs for the Tile Calorimeter.
 - Designed and developed a pulse generator and signal simulation library in **C++** with **Python** bindings, enabling realistic modeling of calorimeter electronics for physics studies and algorithm development; the tool has been adopted by multiple international research groups.
 - Contributed from 2023 to 2024 to an authorship qualification task focused on **linear** and **machine-learning**-based energy reconstruction algorithms for the upgraded Tile Calorimeter electronics targeting the **High-Luminosity LHC (HL-LHC)**.
 - Achieved **full authorship** status within the ATLAS Collaboration in 2024.

EDUCATION

Ph.D. in Computational Modelling Rio de Janeiro State University

- Mar 2021 – Present
- ### Master's Degree in Computational Modelling Rio de Janeiro State University
- Jan 2018 – Apr 2020
- ### Bachelor's Degree in Computer Engineering Rio de Janeiro State University
- Jan 2012 – Aug 2017

SKILLS

Programming Languages

Java C++ Python JavaScript

TypeScript C# C Ruby Shell

Lua PHP

Software Engineering

Distributed Systems RESTful APIs

Backend Development

Web Frontend Development

Authentication & Authorization

Test-Driven Development

Version Control (Git)

Cloud & Infrastructure

AWS Infrastructure as Code

Terraform Docker

Container Orchestration

SQL Databases NoSQL Databases

Scientific Computing

Signal Processing Machine Learning

Numerical Methods Data Analysis

LANGUAGES

Portuguese (Native)
English (Fluent)
French (Intermediate)
Spanish (Basic)



EXPERIENCE

Technical Lead & Senior Full-Stack Software Engineer

O2 Filmes

📅 Sept 2018 – Jan 2022

📍 Remote – São Paulo, Brazil

- Led the design and development of a collaborative online text editor and project management platform dedicated to screenwriters.
- Architected and implemented back-end services using **Ruby on Rails**, **MongoDB**, and **Node.js**, and front-end applications using **React** and **Etherpad**, following a **microservices**-based, cloud-native architecture.
- Designed infrastructure as code using **Terraform**, deploying containerized services with **Docker** on **Amazon ECS** clusters.
- Took ownership of the full software lifecycle, including system design, implementation, automated testing, deployment pipelines, and operational monitoring.
- Acted as technical lead by mentoring developers, defining architectural decisions, prioritizing backlog items, and coordinating development iterations and A/B experiments.
- Implemented advanced features such as real-time multi-user collaboration, data visualization with **D3.js**, notification systems, file import/export pipelines, and complex UI interactions.

Full-Stack Software Engineer

DataHex Computer Technology

📅 May 2016 – Jun 2018

📍 Nova Friburgo, Brazil

- Designed and developed an event ticketing application for **Android** using **Java**, including data synchronization and Bluetooth-based receipt printing.
- Designed and implemented a **cloud-based** Point of Sale system with business management features, using **Node.js** for back-end services and **AngularJS** for front-end applications, following a **microservices** architecture.
- Developed a cross-platform desktop application using **TypeScript** and **Electron**, supporting data synchronization over the internet and across multiple local network nodes using **peer-to-peer** communication.
- Implemented a centralized authentication and authorization system based on **OAuth 2.0** and **OpenID Connect**.

Full-Stack Software Engineer & Mobile Developer

Vista Group Network

📅 Jun 2014 – Apr 2016

📍 Nova Friburgo, Brazil

- Developed a **cloud-managed** parking management system using **Android** devices for ticketing and infringement monitoring, with mobile Android application written in **Java** and back-end services in **.NET**.
- Developed cross-platform **iOS** and **Android** mobile applications for parking ticket purchases using **Ionic** and **JavaScript**.
- Designed and implemented a computer vision solution to detect free parking spaces using surveillance camera feeds, developed in **Python** with **OpenCV**.

OPEN SOURCE CONTRIBUTIONS

Athena

The ATLAS Experiment's main offline software

🔗 https://gitlab.cern.ch/atlas/athena/-/merge_requests?state=all&author_username=ginaciog

Etherpad

A real-time collaborative editor for the web

🔗 <https://github.com/ether/etherpad-lite/commits?author=ingoncalves>

Scilab

Free and Open Source software for numerical computation

🔗 <https://github.com/scilab/scilab/commits?author=ingoncalves>

REFEREES

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✉ Nova Friburgo, Brazil

ACHIEVEMENTS



Breakthrough Prize in Fundamental Physics – Breakthrough Prize Foundation

Awarded collectively to all members of the ATLAS Collaboration at CERN for their contributions to the discovery of the Higgs boson and to major advances in particle physics.



ATLAS Authorship Qualification – CERN

Achieved full authorship status in the ATLAS Collaboration after completing a one-year qualification project focused on software development, detector performance, and data quality activities.



Cum Laude Honors – Rio de Janeiro State University

Graduated with academic distinction in recognition of sustained high academic performance.



DELF B2 Certification – République Française

French language diploma issued by the French Ministry of National Education, certifying proficiency at the B2 level.