GUILHERME I. GONÇALVES

Senior Software and Data Engineer | M.Sc. Computer Modeling

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EXPERIENCE

Senior Software Engineer

Prime IT

Feb 2022 – Present Remote – Lisbon, Portugal

- Worked as a software development consultant for Siteimprove, a global Software-as-a-Service (SaaS) company specializing in cloud-based tools and services for website governance and optimization.
- Led the development of Back-ends utilizing **C# + .NET** and **NodeJS**, and Front-ends using **React JS**, within a cloud-driven and **micro-services** architecture.
- Pioneered the creation of a **React JS** Design System with a core focus on **accessibility**, meticulously adhering to the **Web Accessibility Initiative** – Accessible Rich Internet Applications (WAI-ARIA) standards.
- Drove the development of innovative solutions by leveraging the **AWS** ecosystem—including **DynamoDB**, **CloudFront**, and **ElastiCache** to deliver scalable, high-performance applications. Additionally, worked with **AI-based** APIs, enabling deeper data-driven insights and enhancing digital experiences for customers.
- Contributed to agile development processes by defining and refining tasks in international meetings, and orchestrating Sprints 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 to design and implement advanced **energy reconstruction algorithms** for the ATLAS Tile Calorimeter at the **Large Hadron Collider**, the world's largest and most powerful particle accelerator. Also contributed to the maintenance and upgrade of the Tile Muon Digitizer Board during the **Long Shutdown 2** (LS2) period.
- Returned on-site in 2021 for a short mission to design and implement a **machine learning**-based energy estimation tool in the Athena software framework, using both **C++** and **Python**.
- Worked remotely in 2021 as a **Data Quality Validator** for the Tile Calorimeter, assessing the integrity and performance of detector electronics and reconstructed data.
- Designed and developed a pulse generator library for calorimetry studies in **C++** with **Python** bindings, enabling realistic simulation of electronic readouts for physics analysis and AI model training; the tool has been widely adopted by research groups internationally.
- Contributed remotely from 2023 to 2024 to an authorship qualification task focused on the development of **linear** and **machine-learning**-based energy reconstruction algorithms for the ATLAS Tile Calorimeter, targeting the upgraded electronics for the **High-Luminosity LHC** (HL-LHC).
- Achieved **full authorship** status within the ATLAS Collaboration in 2024.

EDUCATION

Ph.D., Computational Modelling

Rio de Janeiro State University

Mar 2021 – Present

Master's degree, Computational Modelling

Rio de Janeiro State University

Jan 2018 – Apr 2020

Bachelor's degree, Computer Engineering

Rio de Janeiro State University

Jan 2012 – Aug 2017

SKILLS

Programming Languages

C++ | Python | JavaScript | TypeScript | C# | Ruby | Java | Lua | PHP | C | Shell

Miscellaneous Skills

Machine Learning | Signal Processing | Backend Development | Web Frontend Development | Mobile Development | AWS Suite | Microservices | RESTful APIs | Databases | OAuth & OpenID | Docker | Terraform | Container Orchestration | Test-Driven-Development | SCRUM | Git

LANGUAGES

Portuguese
English
French
Spanish

EXPERIENCE

Technical Lead & Senior Full-stack Engineer

O2 Filmes

Sept 2018 – Jan 2022 | Remote – São Paulo, Brazil

- Developed a robust and online text editor and project manager system dedicated to screenwriters.
- Developed its Back-end using **Rails + MongoDB + Node.js** and its Front-end using **React JS + Etherpad**, operating in a **cloud-driven** and **micro-services** architecture written with **Terraform** using **Docker** containers running on **Amazon ECS** clusters.
- Responsibilities included all development tasks (create code, test, automate deployments, etc.), training new developers, discussing the next A/B tests to be run, and listing/detailing/prioritizing the stories to be played.
- Implemented features such as multi-user tracking, data visualization with D3, notifications, importing, parsing and exporting files, advanced graphical interface features, etc.

Full-stack Developer & Software Engineer

DataHex Computer Technology

May 2016 – Jun 2018 | Nova Friburgo, Brazil

- Designed and developed an Event Ticket application for **Android** written in **Java** with data synchronization and Bluetooth printer.
- Designed and developed a **cloud-based** Point of Sale system with business management features, using **NodeJS** in the Back-end and **AngularJS** in the Front-end, following the **micro-services** architecture.
- Developed a desktop application in **TypeScript** using **Electron** with data synchronization across the internet and among multiple local network nodes using **P2P**.
- Developed an industry-standard authentication system implementing the **OAuth 2.0** and **OpenID Connect** protocols.

Full-stack Developer & Mobile Developer

Vista Group Network

Jun 2014 – Apr 2016 | Nova Friburgo, Brazil

- Developed a **cloud-managed** parking software using **Android** devices for ticketing and infringement monitoring. The monitoring mobile application was written in **Java** while the Back-end was written in **.Net**.
- Developed an **iOS** and **Android** application for parking tickets purchase using **Ionic** with **JavaScript**.
- Created software to detect free parking spaces using **image processing** from surveillance cameras. The tool was developed using **Python** and **Open-CV**.

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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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.