Lucas B. Carinhanha Rocha

Senior Backend
Java · Spring Boot
Quarkus · Python · Go

CONTACT

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LANGUAGES

Portuguese — **native**
English — **intermediate**

LANGUAGES & FRAMEWORKS

Java · Spring Boot · Quarkus · Java EE · Python · Go · C++

CLOUD

AWS — Lambda, S3, DynamoDB, SQS, SNS, Step Functions, EventBridge

ARCHITECTURE

Microservices · REST APIs · Hexagonal Architecture · Asynchronous Messaging · Observability

DATA

PostgreSQL · Oracle · SQL Server · DynamoDB · Apache Kafka

DEVOPS

Docker · Git · Gradle · Bitbucket Pipelines · Linux · Dynatrace · Kibana · Rancher · Splunk

AI

Claude · Cursor · AI-assisted code generation · Log and incident analysis

Summary

Backend Software Developer with 5+ years of Java development, plus 6+ years of research in algorithms and optimization. Experience on large-scale projects and enterprise systems (insurance, telecom and public sector), building REST APIs, microservices and integrations with Java, Spring Boot, Quarkus and Java EE. Background in software architecture, distributed environments, AWS, messaging (Kafka, SQS), observability and root cause analysis in production. Uses Python and Go for automation and supporting services, and applies AI tools to software development. M.Sc. and Ph.D. in Computer Science, with research in bioinformatics, algorithms, heuristics and graph theory.

Experience

Senior Software Developer
05/2025 – present

T.O. Brasil · assigned to Prudential do Brasil · Rio de Janeiro

- Developed and evolved RESTful APIs and microservices in Java (Spring Boot) and Python, using Gradle, AWS, Apache Kafka, Oracle and PostgreSQL.
- **Challenge:** Recurring failures in processing proposals, policies and premium collections for XP Seguradora, which always required manual reprocessing. **Solution:** Root cause analysis using Splunk logs and local debugging, which revealed a cache that discarded subsequent Kafka events for the same proposal, even when they carried different statuses requiring different handling. Fully refactored the service to handle each scenario and added end-to-end traceability with a *transactionId* propagated across the whole transaction. **Result:** Legitimate events were no longer ignored, reducing manual reprocessing, and every request became traceable from start to finish in the logs.
- **Challenge:** Integrating Itaú Seguros life insurance quoting without coupling the partner's specific rules to internal services. **Solution:** Built a layered architecture from scratch: a generic *adapter-base* (quotes with a broad set of fields), an *adapter-dedicated* holding Itaú-specific rules, and an *aggregation* layer orchestrating the internal services (risk accumulation, quote PDF generation, etc.), which are the only ones with database access. **Result:** Quote flow isolated per partner, with a reusable generic base for onboarding new partners.
- Developed the asynchronous notifier for Itaú: the *adapter-dedicated* receives the event and enqueues it on SQS, and the notifier fetches the full proposal from Itaú, updates the proposal internally and reports success or failure back to the partner.
- Supported technical leadership, helped the team with decisions on Java microservices and covered for the Tech Lead when absent.
- Used Claude with MCP, including creating skills and rules for Java/Spring Boot code, integrating with repositories and Jira, and analyzing logs.

Mid-level Software Developer
12/2024 – 05/2025

Inovvati Tecnologia · assigned to Detran-MS · Campo Grande/MS

- **Challenge:** Making exams accessible to students who need to hear the questions during the test. **Solution:** Took part in the "Exam Reader" PoC, using OpenAI Text-to-Speech and JavaScript, building the page that simulates an exam with questions read aloud in a natural-sounding voice. **Result:** PoC presented and demonstrated to Detran-MS management.
- Maintained and evolved, in Java EE, the system operators use to manage the stages of driver's license (CNH) issuance, with integration to mainframe legacy systems and heavy use of native SQL.
- Created and maintained operational and analytical reports with Eclipse BIRT.

Mid-level and Senior Software Developer
10/2021 – 11/2024

Canopus · assigned to Akross (client: Claro) · Porto Alegre/RS

- Mid-level from 10/2021 to 10/2023 and Senior from 11/2023 to 11/2024.
- Developed and evolved Java microservices (Spring Boot and Quarkus) for Claro's offer subscription solutions, integrating with DynamoDB, S3, SQS, SNS, Step Functions and EventBridge.
- **Challenge:** The operations team had to manually reprocess messages piling up in DLQs. **Solution:** Go PoC of a service that monitors the queues and triggers automatic reprocessing once a message threshold is reached. **Result:** Approved by the team and adopted as the official DLQ reprocessor, eliminating manual reprocessing.
- Implemented an SMS billing service in Quarkus that checks the database to see whether the SMS was already sent, checks pending items and validates the allowed sending window before sending. Choosing Quarkus also served to evaluate the framework's performance.
- Experimental implementation of hexagonal architecture (Ports & Adapters), serverless functions (AWS Lambda) in Python and CI/CD with Bitbucket Pipelines.

Research Fellow in Computer Science
01/2018 – 08/2024

UFMS · Graduate Program in Computer Science · Campo Grande/MS

- **Challenge:** **Ph.D.** • Mapping DNA sequences onto De Bruijn graphs, where exact algorithms ran out of memory or exceeded 24 hours of execution. **Solution:** Proved the equivalence between De Bruijn graphs and simple sequence graphs, which made it possible to implement exact algorithms from the literature, and designed 4 heuristics. Studied an NP-complete variant (changes in the graph), reformulating the problem and implementing a polynomial-time exact algorithm (BMTC, using bipartite matching and the Hungarian algorithm). **Result:** Heuristics that stay within memory limits, with accuracy competitive with BGREAT and BrownieAligner, validated on real NCBI data and published at ICCSA 2023.
- **Challenge:** **M.Sc.** • Finding DNA substrings specific to a group of sequences, which act as signatures to tell groups apart, tolerating up to k mismatches (Hamming distance), where the exact solution had a high computational cost. **Solution:** Heuristics that compute only part of the comparison matrix, and parallel processing on a cluster with MPI (C++). **Result:** Reduced cost of the exact solution, with results published at BSB 2018 and IEEE BIBE 2019.
- Publications at international conferences (BSB, BIBE and ICCSA) and teaching internship in Algorithms and Programming I and II.

Junior Software Developer
12/2013 – 08/2014

Bitsis · Campo Grande/MS

- Developed and maintained enterprise systems in .NET and SQL Server, and built reports with Crystal Reports for Fiat Enzo. Internship developing new applications from 08/2013 to 11/2013.

Earlier experience

PET Sistemas Fellow · UFMS · Rocks Cluster (Hadoop) and research — 11/2014 – 12/2017
Software Development Intern · UFMS · LEDES · Titan framework — 05/2016 – 09/2016
Volunteer Tutor · UFMS · Destacom · teaching logic and Python — 01/2015 – 12/2015
IT Support Intern · Plaenge — 12/2012 – 07/2013

Education

Ph.D. in Computer Science
2020 – 2024

UFMS · completed

M.Sc. in Computer Science
2018 – 2020

UFMS · completed

B.Sc. in Information Systems
2014 – 2018

UFMS · completed

IT Technician (technical high school)
2008 – 2011

E. E. Waldemir Barros da Silva · completed

Publications

- **bioRxiv (2024):** Lucas B. Rocha, Said Sadique Adi, Eloi Araujo. *The De Bruijn Graph Sequence Mapping Problem with Changes in the Graph.*
- **ICCSA (2023):** Rocha, L.B., Adi, S.S., Araujo, E. *Heuristics for the de Bruijn Graph Sequence Mapping Problem.* Lecture Notes in Computer Science, vol. 13956. Springer.
- **BIBE (2019):** Rocha, L. B.; Adi, S. S.; Stefanes, M. A.; Araujo, E. *Heuristics for the Specific Substring Problem with Hamming Distance.*
- **BSB (2018):** Rocha, L. B.; Adi, S. S.; Araujo, E. *Specific Substring Problem: an application in bioinformatics.*