Rafael Cassemiro Freire

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PROFESSIONAL SUMMARY

10+ years of experience building low-latency, high-concurrency distributed systems in financial and enterprise environments.
Advanced expertise in Java, Python, and Unix socket programming for mission-critical, high-throughput applications.
Strong background in cloud-native architectures, infrastructure automation, and observability, with GCP and Oracle Java certifications.
Proven impact in performance engineering, including 25% RFQ latency reduction at Bank of America through scalable design optimizations.
Hands-on experience with deep learning frameworks (TensorFlow, PyTorch) and current studies focused on predictive modeling and applied AI.
Exploring autonomous AI agents and GitHub Copilot–style copilots to accelerate software development and improve developer productivity.
Practical knowledge of data pipelines, model integration, and real-time analytics for intelligent systems.
Passionate about bridging AI-driven innovation with robust system design, ensuring scalability, reliability, and cost efficiency.

AREAS OF INTEREST

Software Architecture, Java Ecosystem, Cloud Computing, Kubernetes Networking, Cryptography, Low Level Languages (Assembly x86), Observability, Infrastructure as code

TECHNICAL SKILLS

Languages: Java, Python, TypeScript, Unix/Linux Systems Programming (Sockets)
Cloud & Infrastructure technologies: AWS, Google Cloud Platform (GCP), Kubernetes, OpenShift, Docker, CI/CD, Infrastructure-as-Code, Reactor Pattern, OpenTelemetry
Databases/Streaming: Apache Cassandra, MongoDB, Redis
Networking: Low-latency TCP/UDP socket programming, concurrent system design
Observability Tools: Splunk, Dynatrace

PROFESSIONAL EXPERIENCE

Bank of America - Merrill Lynch October 2022 - Present
Vice President, Software Engineer III

- Design and development of a low-latency electronic trading platform for bond revisions using Java, OpenShift, and MongoDB, reducing RFQ processing time by 25% in high-concurrency environments.
- Architected CI/CD pipelines for OpenShift clusters, reducing deployment complexity and enabling zero-downtime updates.
- Implemented real-time observability using OpenTelemetry and Splunk dashboards to monitor system health and latency metrics.

EPAM Systems April 2016 – October 2022
Lead Software Engineer

- Built AI/ML-driven digital avatars for industrial drilling (Java, Angular, GCP), optimizing resource allocation via Python-based geospatial calculations.
- Modernized a banking microservices platform (Java, Spring Boot) handling 10M+ daily transactions, leveraging Redis for low-latency caching.
- Spearheaded cloud migration of legacy systems to GCP, reducing infrastructure costs by 30% through Kubernetes orchestration.

- Conducted internal training on distributed system design and code quality standards.

Universidade Federal de Minas Gerais May 2013 – April 2016
System Analyst

- Backend development of a system for public healthcare in Brazil, fully adopting Jakarta EE, which is responsible for budget allocation on regional standards. This system has been greatly adopted by public healthcare in Brazil reducing considerably the wait time for resources in sparsely populated areas.
- Worked with definitions of code quality patterns and Sonar to ensure a high level of coding.
- Optimized transactional performance by **50%** through Hibernate caching and concurrency tuning.

Avenue Code LLC August 2011 – May 2013
Software Engineer

- Backend Developer for a Product Information Systems for Macy's, utilizing Java, Spring MVC as main framework for view and Controller layers, Hibernate as repository layer.
- Followed Test Driven-Development very closely during creation of new stories.
- Contributed to a media integration for Macys.com that was planned for users worldwide, using Facebook API focused in Javascript and JQuery.

Algar Tecnologia/Synos Technologies September 2009 – August 2011
Software Developer

- Responsible for the development of a system used to control taxes for the Minas Gerais government.
- Successfully refactored the core of the application that consisted of heavy use of remote transactions, which improved the performance by 50% in terms of memory usage and minimized code complexity by 30%.

EDUCATION AND CERTIFICATIONS

The University of Texas at Austin — *Austin, TX*
Master of Science in Computer Science *(In Progress)*
Expected Graduation: Jun, 2027

Pontificia Universidade Católica de Minas Gerais — *Belo Horizonte, MG, Brazil*
Bachelor of Science in Information Systems
Graduation: 2004 - 2009

Google Cloud Certified
Professional Cloud Architect

Oracle Certified Professional
Java SE Programmer v6

PORTFOLIO

Personal Tech Blog
https://rafaelcfreire.github.io/

Github Profile
https://github.com/rafaelcfreire