

## PROFESSIONAL SUMMARY

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Software Engineer with experience in distributed systems, computer vision, and Machine Learning pipelines. Skilled in event-driven architectures (AWS Lambda, Step Functions, EventBridge), vector databases (Qdrant, pgvector), and large-scale data processing with Databricks and BigQuery. Developed solutions for facial recognition, object tracking, RAG systems, and cloud automation using Python, Typescript, and Rust.

## EDUCATION

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- **Federal University of Espírito Santo (UFES)** Vitória, ES  
*B.Sc. Electrical Engineering — Computing Emphasis*  
*Mar. 2019 – Dec. 2025*
- **NVIDIA Deep Learning Institute (DLI)**  
*Fundamentals of Accelerated Computing with CUDA Python*  
*Mar. 2024*

## EXPERIENCE

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- **C&R Consulting & Innovation** Vitória, ES  
*Software Engineer*  
*Jun 2024 – Present*
  - **Intelligent Monitoring System for Gas Stations:** Developed a computer vision pipeline in Python for vehicle tracking using embeddings and Ultralytics; spatial mapping using Shapely; Dockerized Python backend on AWS EC2 with APIs for cameras, zones, and workers; React/Typescript backoffice with canvas-based zone editor; vector storage with Qdrant; metrics on RDS; automated processing via AWS Step Functions and EventBridge; infrastructure managed with Terraform.
  - **Reading Difficulty Detection with Adaptive Interfaces:** Implemented a Python WebSocket server for real-time facial analysis; extracted landmarks with Mediapipe to measure visual strain; dark-glasses detection using Ultralytics; in-memory event logic; frontend integration for UI adaptation; CI/CD pipelines using GitHub Actions.
  - **Perishable Goods Return Management System:** Implemented a robust data architecture for returns processing, orchestrating paginated synchronization (cron job via PM2 in Typescript) between Oracle DB and Firebase. Ensured structured ingestion into BigQuery for analytical workloads. In the React/TS frontend, built a Kanban interface to manage 11 workflow stages with dynamic filters by region, customer, and operator.
  - **Facial Recognition Platform using CLIP Embeddings:** Evaluated embedding models (CLIP, ViT, Dino, ResNet) and selected CLIP; built Python workers for embedding extraction; created AWS Lambda + Step Functions pipelines for presence detection, zone events, and webhooks; implemented pgvector for similarity search; React backoffice for camera/person management; cron jobs with PM2; integrations with S3, RDS, and EventBridge. Developed additional image enrichment processes using OpenCV to improve recognition robustness with few samples.
  - **Intelligent Analysis Platform for Innovation Challenges:** Web scraping from Google, DuckDuckGo, and Yahoo; content classification using Mastra AI; Cloud Functions for recurring data collection; automated updates and inserts; Slack/email alerts; ranking using contextual similarity.
  - **RAG Module for PDFs, DOCX, XLSX Integrated with API:** Developed a RAG module in Node.js/NestJS using strategies and factories for PDF/DOCX/XLSX ingestion; embedding extraction and indexing for contextual queries; integrated RAG flows with platform agents and chat system.
- **ArcelorMittal Brasil** Serra, ES  
*Electrical Engineering Intern*  
*Aug. 2023 – Jun. 2024*
  - **Slag Detection in KR Vessels (1st Place — Innovation & Digital Transformation):** Created a pure Python application using PyQt5 and OpenCV for automatic slag segmentation in molten iron KR vessels; integrated with industrial automation systems to compute the Slag Scraping Index; awarded 1st place in ArcelorMittal's 4.0 Internship Program.
  - **Industrial Reliability System:** Developed reliability analysis module using pure Python for ingestion and preprocessing of Databricks data via API/SQL; built transformations and multiple joins to compute MTBF, IDF, availability, and maintenance KPIs; implemented a Python backend for automated reports and a React dashboard for KPI visualization.

## PROJECTS

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- **Comparative Study of Embedding Architectures for Facial Recognition (Undergraduate Thesis):** Developed a modular pipeline in Python to systematically evaluate 8 embedding architectures (ViT, CLIP, DINO, DeiT, ResNet50, ResNet18, EffNet\_B0, MobileNet). Implemented a Factory Pattern for embedding extraction and a validation module for metrics (Accuracy, F1-Score, Recall). The project aims to quantify robustness and efficiency across models. GitHub
- **Linalg-rs: Linear Algebra Library in Rust:** Built a Rust library inspired by NumPy, focusing on performance and memory safety. Implemented vector and matrix structures and operations (addition, subtraction, dot product, cross product, matrix multiplication), leveraging Rust's low-level performance for high-performance numerical computing. GitHub

## TECHNICAL SKILLS

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- **Languages:** Python, Typescript, C, C++, SQL, NoSQL, Rust
- **Technologies:** AWS (EC2, S3, Lambda, Step Functions, EventBridge, API Gateway), Terraform, Docker, PM2, GitHub Actions, Firebase, BigQuery, Databricks (API/SQL), PostgreSQL (pgvector), Qdrant
- **Machine Learning & Data:** PyTorch, TensorFlow, OpenCV, Ultralytics, Mediapipe, Embeddings, Vector Search, MLOps (Pipelines, Model Evaluation, Deployment), RAG, ETL/ELT, Mastra AI, LangChain
- **Frameworks:** FastAPI, NestJS, React

## AWARDS

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- **1st Place — ArcelorMittal Internship Program 4.0:** Recognized for developing a computer vision solution (PyQt5 + OpenCV) for slag segmentation in KR vessels and integrating results with industrial automation.