

Graziele Barbosa

Data Scientist · Machine Learning · Python

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Summary

Data scientist and master's student in Applied Computing at UFMS, with a degree in Physics. I work across the full data lifecycle: collection, cleaning, analysis, machine learning modeling, and delivery in systems that run in production. I built an automatic exam grader with computer vision that is now used nationwide by an educational institution and, in my master's, I built a pipeline that combines questions from ENEM, FUVEST, and UNICAMP and generates text and image embeddings for classification. I currently work as a researcher on the Embrapa I/O project, evaluating LoRa networks to collect sensor data in rural areas without internet. Physics gave me the habit of questioning a result before trusting it, and my experience in education taught me to start with the right question.

Experience

Graduate Researcher - UFMS · Embrapa I/O Project

Feb 2026 - Present

Works on the Embrapa I/O project, a collaborative development platform for digital agriculture, researching communication between sensors in rural areas with no internet access, one of the main challenges in bringing real-time monitoring to the field. Evaluates which long-range, low-power wireless communication technology is best suited for collecting data from sensors spread across large agricultural areas, using a reference scenario of about 1,000 hectares.

The technologies under study include LoRa, LoRaWAN, and LoRa-based mesh networks such as Meshtastic and MeshCore, as well as integrating the collected data via MQTT with IoT device management platforms.

- Literature review on LoRa, LoRaWAN, and mesh topologies applied to digital agriculture
- Configuring and programming LoRa devices to build test networks
- Testing real devices, both in the lab and in the field, measuring range, packet delivery rate, latency, power consumption, and network behavior across multiple hops
- Comparing star (LoRaWAN) and mesh (Meshtastic, MeshCore) topologies in terms of coverage, scalability, and reliability
- Collecting, processing, and analyzing experimental data in Python, with visualizations to support the comparison between technologies
- Integrating the sensor data flow via MQTT, together with the research group responsible for data ingestion and governance on the platform

High School Coordinator - Sesc MS

Nov 2024 - May 2026

Developed and shipped technology products that transformed the school's operation: an automatic answer sheet grading system using computer vision (300 students, 30 mock exams, grading cut from hours to minutes) and the Class Council dashboard, which brought performance data into pedagogical meetings. Solutions that became part of the school's routine and stayed.

Also led the complete restructuring of the High School program: new pedagogical model, curriculum, course load, and value proposition, all driven by market analysis and focused on public university admissions.

Physics Teacher - Sesc High School

Feb 2024 - Nov 2024

Teaching focused on preparing students for the main university entrance exams in Mato Grosso do Sul. Delivered parallel preparation courses for the PASSE UFMS exam and the UFMS Entrance Exam, with individual performance tracking per student.

Technology Department Coordinator - Colégio Classe A

Mar 2020 - Oct 2023

Responsible for the school's entire technology operation: infrastructure, assessment workflow and grading, and management of the social media team and digital marketing campaigns.

Developed an API integration with the school management system, automating processes that previously relied on manual operation. Trained and prepared the internal team to sustain the implemented solutions.

Physics Teacher - Colégio Classe A

Feb 2020 - Oct 2024

High school Physics teaching focused on university entrance exam preparation. Delivered parallel preparation courses for the PASSE UFMS and UFMS Entrance Exam, combining the teaching role with technology department coordination for nearly four years.

Selected projects

DOGI · Personal Organization App

PWA in production · 15 modules · 26-table API

Modular personal life management PWA: users pick which of the 15 modules to enable, and the Statistics screen cross-references data from all of them. Django REST backend with JWT authentication, real e-mail confirmation and cross-device sync. Deployed on a VPS with Docker, PostgreSQL and a full CI/CD pipeline on GitHub Actions.

dogi.grazielebarbosa.dev

Shadow4us · Disposable Email Service

Live · 79 automated tests · HMAC-signed webhook

Mailinator-style disposable email service: users create prefix@domain mailboxes and every e-mail sent to them shows up in the panel. Inbound mail arrives via a Mailgun webhook with HMAC signature and anti-replay checks; HTML is sanitized with nh3 and rendered in a sandboxed iframe (anti-tracking), with automatic message expiry. Deployed on a VPS with Docker, PostgreSQL and CI/CD on GitHub Actions.

shadow4us.uk

Barbershop Scheduling Platform

SaaS in production · self-hosted VPS with Docker

SaaS scheduling platform built from scratch for barbershops, focused on mobile UX and WhatsApp integration. Booking wizard in Django with role-based access control and custom CAPTCHA generated with Pillow. Infrastructure on VPS with Docker Compose, PostgreSQL, and SSH remote administration.

appbarbearia.grazielebarbosa.dev

Class Tool Catalog

Live · used by a master's class (UFMS/FACOM)

Collaborative tool catalog built for a master's class: public reading, with publishing restricted by invite code. Students suggest tools, vote and comment in threads, and the teacher follows everything in a dedicated panel. Django with custom rate limiting, deployed on a VPS with Docker and CI/CD on GitHub Actions.

catalogo.grazielebarbosa.dev

Answer Sheet Corrector

300 students · 30 mock exams · from hours to minutes

Automatic answer sheet correction software with integrated charts and QR code. Generates performance reports for decision-making.

grazielebarbosa.dev/projetos/corretor-de-gabaritos

Bioexatas

Live · institutional site + student portal

Institutional website with an integrated student portal. Teachers publish lessons online and students follow the entire course through the platform.

bioexatas.com

Class Council Dashboard

Used in real class councils · 20 subjects

Interactive Streamlit web tool for individual and subject-level tracking, used directly by coordinators and teachers in the Class Council.

grazielebarbosa.dev/projetos/dashboard-conselho

Education

Master's in Applied Computing - UFMS (In progress)

Degree in Physics - UFMS (Completed)

Technologies

Data & Analysis	Python, Pandas, NumPy
Machine Learning	scikit-learn, PyTorch, CLIP, Text and image embeddings, Classification
Computer Vision	OpenCV, Pillow, pdf2image, pyzbar
Visualization & BI	Plotly, Matplotlib, Streamlit, Power BI
IoT & Wireless Networks	LoRa, LoRaWAN, Meshtastic, MeshCore, MQTT
Web & APIs	Django, Django REST Framework, JWT, Webhooks, Tailwind CSS
Databases	PostgreSQL, SQLite
Infrastructure & DevOps	Docker, Docker Compose, CI/CD (GitHub Actions), Linux, Git
Automation & Documents	fpdf2, pdfplumber, openpyxl, PyAutoGUI, Google Apps Script

Full portfolio with detailed case studies: grazielebarbosa.dev