



Facundo Branbate

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Profile

I'm a Software Developer from Uruguay, mainly focusing on backend development using **Python** for **data science tasks and AI-Powered systems**.

I've worked extensively with **geospatial** and **time-series data**, finding important patterns and insights. I also work with Machine Learning, building datasets, training AI models, and creating complex systems based on data.

Additionally, I have experience with Retrieval-Augmented Generation (RAG) systems using **LangChain** and **LLM models like GPT**.

On top of that, I have experience in **frontend** development using **ReactJS**, which helps me to build complete software solutions from start to finish.



Work Experience

11/2022 — present
Montevideo, Uruguay

Software engineer Marco Fintech

<https://marcofi.com>

I work as a **Backend Engineer** at a Fintech startup focused on improving access to financing for SMEs in Latin America. I **led** backend development for several key projects, contributing significantly to both **architecture** and implementation.

Some of the projects I have been involved in include:

- **Airwallex API Integration:** Integrated with the **Airwallex API** to add banking features like payments, account creation, and card payments to the Marco platform, overseeing both **architecture** and backend work.
- **Automating Due Diligence with LLMs:** Developed a system using **LLMs** to automate credit and legal information checks, identifying red flags and saving hours of manual work for risk and legal teams.
- **Integration with Mexico's SAT:** Implemented an integration with **Mexico's SAT** to automate credit history creation and analytics from invoice data, significantly reducing the time needed for credit evaluations.
- **Automating the Funding Process:** Created a system that uses **OCR and LLMs** to process invoices and additional documents, grouping and extracting relevant information. This automation saved hours of manual data entry for the operations team and streamlined the process for clients.
- **Salesforce Integration:** Improved the flow of information between the Marco platform and **Salesforce**, ensuring seamless data synchronization and better information management.

11/2022 — present
Montevideo, Uruguay

Freelance Data scientist Smartway

<https://www.onsmartway.com/>

I work on the **design, implementation, and testing** of various backend and data science tasks, providing essential support to the software development team at Smartway.

Currently, I am leading the **data extraction, dataset generation, and model training** in a collaborative research project between Smartway, INIA (National Institute of Agricultural Research), and ORT University.



Work Experience

We are developing **artificial intelligence models** using **TensorFlow** and **Pandas**, along with satellite images from **Google Earth Engine** and climate data from **NASA POWER**.

These models are designed to **predict agricultural field yields months in advance**, helping insurance companies prepare for potential losses due to adverse conditions such as drought, hail, or other factors. This proactive approach allows insurers to better manage risk and support farmers in mitigating the impact of poor crop yields.

01/2020 — 11/2022
Montevideo, Uruguay

Backend Developer/Data Scientist Smartway

<https://www.onsmartway.com/>

I worked as a **Backend Developer** at Smartway, leading data-related tasks with a focus on **GeoPandas** and **time series analysis**. I was responsible for designing and implementing backend solutions for various applications.

Some of the key projects I led include:

- **Truck Drivers' Work Hour Detection:** Developed a system using GPS data and a **fingerprint reader** to automatically calculate and categorize work hours, automating payroll calculations.
- **Remote Auditing for Harvesters:** Built a system to calculate field yields using GPS and sensor data, generating real-time harvest reports with climate indicators and satellite images.
- **Field Polygon and Work Status Detection:** Created datasets and trained models to detect field polygons and working status without sensors, relying on GPS data.

You can find a detailed account of some of the features I worked on my personal website:

<https://fabran99.github.io/portfolio-work-2/>

<https://fabran99.github.io/portfolio-work-3/>

My core responsibilities included:

- **Backend Development:** Using **Python**, **Django**, **Pandas**, **GeoPandas**, **PostgreSQL**, **MongoDB**, and **Redis**.
- **Data Analysis:** Specializing in geospatial data management for vehicle and agricultural tracking.
- **Statistics & Indicators:** Calculating key metrics for truck fleets and agricultural machinery.
- **API & Algorithm Development:** Designing APIs and complex algorithms for client projects.
- **Machine Learning:** Building models to solve specific problems and creating datalakes for large datasets.

03/2019 — 01/2020
Montevideo, Uruguay

Full stack developer Spymovil

I worked as a **Full-Stack Developer** at Spymovil, a company specialized in collecting and interpreting data from sensors installed in pipelines, power stations, water tanks, and other critical infrastructure. I had the opportunity to collaborate with prominent clients, including OSE, UTE, and various other Uruguayan state companies.

My key responsibilities included:

- **Frontend and Backend Development:** Leveraged **ReactJS**, **Python**, **Django**, and **Pandas** to develop robust software solutions that ensured efficient data processing and accurate interpretation.
- **API Development:** Designed and implemented APIs to streamline the availability of sensor data and statistical insights, significantly improving data accessibility and usability.
- **Web Interface Design:** Created intuitive web interfaces that enhanced user interaction and facilitated seamless data interpretation, ensuring a smooth and user-friendly experience.



Portfolio

● Galia: AI-Powered Legal Assistant

<https://galia.ai>

Galia is an advanced AI platform designed to enhance legal workflows by offering powerful tools for document analysis, drafting, legal research, and answering legal questions. The backend is built with **Python**, **Django**, **LangChain**, **Pinecone** (for vector-based search), and **MongoDB**, ensuring robust and efficient data management.

There is an article in my blog explaining the features of this project:
<https://fabran99.github.io/portfolio-work-4/>

Key features of Galia include:

- **Legal Question Answering:** Galia can respond to legal questions by analyzing the vast array of legal information it has access to, providing users with accurate and contextually relevant answers.
- **Comprehensive Legal Research and Document Analysis:** Galia enables users to perform deep semantic searches across legal documents, extracting relevant information from sources like IMPO, the Uruguayan judicial sentences jurisprudence database, and law journals from Uruguayan universities.
- **AI-Assisted Document Drafting and Refinement:** The platform supports the drafting and refinement of legal documents, providing users with AI-driven insights, content summarization, legal research, and real-time corrections.
- **Automated Information Management:** Galia's system efficiently manages and organizes vast amounts of legal data, making it accessible for quick retrieval and analysis, thus improving the accuracy and speed of legal tasks.

● Data analysis app for agriculture

<https://fabran99.github.io/portfolio-work-2/>

This agricultural application collects and analyzes data from combine harvesters using GPS, performance, and humidity sensors to generate actionable statistics.

Developed with **Python**, **Django**, **Pandas**, **MongoDB**, and **Redis**, the app also integrates **Machine Learning** to provide additional insights, potentially reducing the need for extra sensors. The use of task queues ensures system efficiency, making it a powerful tool that seamlessly blends technology with agriculture to enhance farming practices.

● Real time assistant for League of Legends

<https://fabran99.github.io/portfolio-work-1/>

This desktop application, built with **ReactJS** and **Python**, delivers real-time recommendations by analyzing statistics from thousands of players. It combines extensive data with immediate processing capabilities to generate valuable insights.

For a detailed explanation of the application's functionalities, technologies used, and underlying architecture, please refer to the link below the title.

● Automatic generation of ranch polygons

<https://fabran99.github.io/portfolio-work-3/>

This feature automatically generates field polygons based on the tracked movement of sowing machines, using **Machine Learning** for precision. It quickly creates a polygon that accurately mirrors the field layout immediately after planting, leveraging GPS data captured from the planters.

It's an efficient tool that combines cutting-edge technology with agricultural practices, streamlining the process of field mapping.



Articles

Algorithms for agriculture

<https://fabran99.github.io/agro-algorithms/>

I've developed a series of algorithms tailored for agricultural machinery, utilizing **Python**, **Pandas**, and **Machine Learning** techniques.

These algorithms highlight the application of advanced technology in the agricultural sector, driving innovation and efficiency.

Character detection in images with Machine Learning

<https://fabran99.github.io/lol-champ-minimap-detection-part-1/>

An experimental project leveraging **Machine Learning** to identify characters from the League of Legends game on the minimap using screenshots.

The project is divided into two stages: the initial phase involves generating a dataset, followed by a phase focused on training the Machine Learning model. This project serves as an intriguing exploration of AI's potential to enhance gaming experiences.

League of Legends Assistant Backend Architecture

<https://fabran99.github.io/arquitecture-lol-app/>

This post explores the backend setup I developed for a League of Legends assistant. It details the types of information utilized and how various server processes keep the statistics up to date.

It's an insightful look into the behind-the-scenes work required to support this gaming tool.



Related knowledge

- Git, GitHub, GitFlow.
- Scrum.
- Arduino.
- 3d Printing.



Hobbies



3d printing



VolleyBall



Videogames