



**José P. Barrantes**

ML Eng & Data Scientist

## Contact



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Costa Rica: San Pedro,  
Montes de Oca.



## Know me

I am a software engineering professional specializing in managing the complexities that data introduces to ML-enabled systems. I also aim to gain a deeper understanding of nature to improve decision-making and quantify the results. In my free time, I also enjoy photography, reading, hiking, and coffee.

Languages: English | Spanish

## Education

### Universidad de Costa Rica

M.Sc. student in Computer Science (started 2020)

B.Sc. in Biology (2017)

## Skills & Technologies

### Technical

**Analytics:** Data Visualization, Causal Inference, Bayesian Data Analysis, Time Series, Statistical Inference, Business Intelligence (BI)

**MLOps/ML Engineering:** ML platform implementation, workflow orchestration, feature stores, model registries, monitoring, and serving.

**Machine Learning (ML):** regression, classification, dimensionality reduction, model validation, ensemble methods, performance metrics, interpretable ML, Deep Learning

**Databases:** ANSI SQL, Oracle, PostgreSQL, PostGIS, T-SQL, Athena, ClickHouse, NoSQL, MongoDB

**Integrative:** Science, Design Science, Teaching, Decision Making, Data Storytelling, Simulation

**Others:** Software engineering, mathematics, research, deployment, high technical literacy

### Soft

**Social:** communication, empathy, Cross-cultural intelligence, teamwork, people skills

**Other:** creativity, adaptability, strong analytical skills, Scientific thinking, Agile, Scrum

## Programming Languages

**Fluent:** **Python** (Scikit-Learn, Matplotlib, Pandas, NumPy, PyTorch, TensorFlow, Keras, FastAPI, Jupyter, etc.)

**R** (Tidyverse, Tidymodels, Shiny, Quarto, RMarkdown, Plotly, DBI, ODBC, RStudio, RStan, daggity, reticulate, caret, future, promises, etc.)

**Okayish:** Working on it :)

**Familiar:** Rust, C++, JavaScript, Julia, Scala, & SAS

## Software and platforms

**Operative Systems:** Linux (Ubuntu, Mint, CentOS): scripting, Bash, C shell  
BSD (Darwin/macOS): scripting, Z shell, Bash  
Windows: scripting, cmd, PowerShell

**Analytics:** Tableau, Superset, QuickSight

**Office:** Microsoft Office@  
Libre Office

**Others:** AWS, Oracle Cloud  
QGIS, PostGIS  
Git, Docker  
DBeaver, pgAdmin, MS SQL Server  
GIMP, Canva, Adobe Photoshop, Scribus  
HTML, CSS

## Expertise in

Bioinformatics, Computational Biology, Marketing, Risk assessment, startups, fintech, fraud analytics, SaaS, Cybersecurity, clinical data, financial data, scientific computing, A/B testing, googling

# Work Experience

2025 -  
Present

**IBM: Machine Learning Engineer & Data Scientist; functions:** in the Fraud Prevention Engineering team, I lead fraud science research initiatives to understand better complex patterns such as camouflage, non-payment intentions, and impersonation. We translate our findings into predictive services and software solutions driven by machine learning. While developing machine learning models is one of my responsibilities, my primary focus is creating and implementing ML products to prevent fraud within the IBM Cloud platform. We utilize open-source tools like Python, MLFlow, Docker, Kubernetes, and Linux to build and deploy our data products. Close collaboration with fraud analysts, software engineers, and non-technical stakeholders is essential for the success of our products. **Achievements:** I designed and implemented the first machine learning platform according to the best MLOps practices. This pipeline supports a system that automates anti-fraud actions, significantly reducing our reaction time (saving the company's money). I also trained the machine learning engine that powers the inference for this product. More exciting developments on the way :)

2023 -  
2024

**Moody's Analytics: Assistant Director Data Scientist; functions:** the Predictive Analytics Chapter focuses on modeling, statistical analyses, experimentation, and process automation. The main tools we use are R, Python, and the AWS ecosystem, accompanied by enormous databases on subjects like climate and public financial information. **Achievements:** To improve its performance, I've experimented with several models (risk assessment, time series, etc.). Also, parallelizing code, lowering the execution time (an increase in performance up to 30x faster), and automating report generation for our customers.

2021 -  
2023

**Arkose Labs: Security Data Analyst; functions:** as one of the central roles within the Customer Success Chapter, we must guarantee the safety of our customers. Find patterns in real-time to identify, describe, and stop cyberattacks, then communicate with customers to deliver findings and explain our approaches to solving fraudulent activity. Design and implement automated solutions within the company to optimize internal processes. Provide insights and recommendations to our customers based on evidence (Statistical Inference & Data Visualization). Research and understand how fraud occurs and its impact, to improve the quality of our product, propose new developments, and guide our customers. All this is done in the context of Big (immense, actually) Data. We use the AWS ecosystem, Python, R, and SQL. **Achievements:** so far, I have several happy customers with my work. I've been part of several projects to automate some of our most common tasks; our team has been awarded several times.

2020 -  
2021

**Namutek Fintech (part of BAC Credomatic Banking Group): Data Scientist; functions:** be part of the whole data-to-insight process. Dive into the data lake, get the data, wrangle it, engineer features, model, get insights, present the findings, and make decisions. Here I integrate a lot of state-of-the-art tools to do high-quality analysis. Python, R, SQL, and the AWS ecosystem were some of the tools we used, in addition to our solid scientific background. Heavy duty in visualization, machine learning engineering, and decision-making. Influence management people, product owners, and project managers. Cultivate a data-driven culture. **Achievements:** saved some budget on license costs by designing and implementing our R Shiny dashboards; developed and deployed more than 50 projects in different company chapters (Marketing, UX, Fraud Prevention, Compliance, etc.); and much more, please ask :).

2011 -  
2018

**Universidad de Costa Rica: Teaching Assistant in various Biology courses; functions:** give theoretical lectures, transmit practical laboratory knowledge/techniques, and evaluate the progress of the students; **achievements:** I've trained over 900 university students in diverse areas of biology.

# Selected portfolio projects

**Full portfolio website.** (2026). A small website to showcase my portfolio projects. **Link.**

**Building a data pipeline for high-performance analytics.** (2025). This project illustrates the creation of an efficient data pipeline to transfer data from the Socrata Open Data API to a local database. The aim is to build a lightweight, high-performance repository optimized for analytical queries on your local machine. The Python ecosystem powers this pipeline, with Mage as the orchestrator, Polars for data transformation, and DuckDB as the database system. **GitHub.**

**Exposing an ML model through an API.** (2024). Here, I developed a machine-learning microservice that predicts bike rentals using a CatBoost regression model. The service is implemented with FastAPI, showcasing the deployment of an ML model as an API. The application is containerized with Docker, and its development is streamlined by a CI/CD pipeline built with GitHub Actions. **GitHub.**

# International Experience

- 2026** **Chile:** presented a talk at **Nerdearla**, Santiago, on fraud prevention, **Machine Learning, and human-in-the-loop design patterns. One day. Talk web page.**
- 2025** **Mexico:** presented a workshop on **building a feature store for time series forecasting with Mage & Feast** at Data Day, Monterrey. **One day.** Material on **GitHub.**
- 2016** **France: presented a conference** on the fungal pathogens of bullet ant in Costa Rica. International Congress on Invertebrate Pathology.  
**Spain: Field Assistant.** Monitoring the bat biodiversity of Gasteizko Mendiak, Basque Country. With the professors Dr. Joxerra Aihartza & Dr. Inazio Garin. **One week.**
- 2019** **Germany:** specialized training on **Machine Learning, and Deep Learning,** at Ulm University. **Research Intern** at the Institute of Evolutionary Ecology and Conservation Genomics, Ulm University. **Six months.**

# Publications

Boerma, D., **Barrantes, J.P.**, Chung, C., Chaverri, G., & Swartz, S. (2019). Specialized landing maneuvers in Spix's disk-winged bat (*Thyroptera tricolor*) reveal linkage between roosting ecology and landing biomechanics. Journal of Experimental Biology. **Link**

# References

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