

Nicolás Robayo Pardo

Data Engineer · industrial engineer by training (M.Sc., operations research and applied statistics)

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PROFESSIONAL SUMMARY

Data engineer with five years of turning models into systems people use: ML credit-risk models at Banco de Bogotá, the risk data warehouse and analytics apps of Colombia's central counterparty (CRCC), the data platform of a Central American assistance company, and an origin–destination estimation pipeline for Bogotá's bus network (about 3.8 million smart-card validations on a weekday). Industrial engineer by training (M.Sc., concentration in operations research and applied statistics, Universidad de los Andes). Based in Berlin; looking for a hands-on data engineering or data science role in a larger team, where I can go deeper technically.

SKILLS

Programming languages: Python (pandas, pytest), SQL, R

Cloud: AWS (ECS, Lambda, EC2, RDS/PostgreSQL), GCP BigQuery

Orchestration and CI/CD: Prefect, Docker, Jenkins, infrastructure as code, dev/staging/pre-prod/prod environments, code review

Storage: PostgreSQL, Oracle, DuckDB, Parquet

BI: Power BI (DAX, M, Embedded; PBIP/TMDL linting tools), Shiny

ML and statistics: scikit-learn, XGBoost, SHAP, GLMs, RAG assistants

Optimization (projects): gurobipy, PuLP, NetworkX, Xpress-Mosel

PROFESSIONAL EXPERIENCE

Analytics Lead — hands-on data engineering

05/2025 – present

LifeOne (UnoGroup)

Remote · part-time since 02/2026

Built and lead a three-person data team (hired and manage two data engineers), reporting to the CTO; about 60 % of my time is spent building. Looking for a hands-on role in a larger team by choice.

- Built the company's analytics platform end to end on AWS (ECS cluster, Lambda, EC2, PostgreSQL databases), DuckDB over Parquet, Python, Prefect and Docker, with dev/staging/pre-prod/prod environments, infrastructure as code, code review and automated deployments.
- Wrote and maintain the Prefect flows that integrate SQL databases, REST APIs and JSON/XML feeds, with a manual sign-off step before publication — a deliberate choice for a three-person team; largest table ~4 M rows, whole warehouse under 50 MB of Parquet.
- Delivered embedded Power BI for 45 internal and ~30 external users (company stores and partners); linted 20 production reports as code (PBIP/TMDL) with Python tools I wrote: 127 findings, 77 broken references fixed, one published service-level KPI corrected by about five points.
- Automated assistance-claims handling: ~70 % average handling time (process time before vs after the automated workflow).
- Hired and manage two data engineers (planning, code review); coordinate data exchange with retail partners (API protocols).

Analytics Professional, Risk & Methodologies (data science and data engineering)

05/2022 – 05/2025

CRCC — Colombia's central counterparty clearing house (Cámara de Riesgo Central de Contraparte)

Bogotá

CRCC was recognised by ESMA as a third-country CCP in 2023.

- Designed and implemented a star-schema data warehouse consolidating risk and market data for regulatory and internal reporting (Oracle, SQL; Jenkins-automated jobs).
- Built and versioned the "CRCC Data" analytics platform with a colleague: Shiny applications and APIs for internal teams and clearing members (releases 1.0.7 → 1.2.6), automated risk back-testing and historical-VaR market-risk simulations.
- Built RAG assistants over the clearing house's rulebook, used by internal teams.

Credit Risk Analyst (ML credit scoring)

10/2021 – 04/2022

Banco de Bogotá

Bogotá

- Developed ML credit-scoring models (payroll-data scoring with decision thresholds; an early-delinquency model) with XGBoost, SHAP and PSI stability checks, and documented them for the risk team.

Teaching assistant, MIAD Optimization course (Coursera)

03/2021 – 06/2022

Universidad de los Andes

Remote

- Wrote and graded Python/PuLP case assignments (marketing mix, depot location, project selection and scheduling, multi-objective location), exams and lecture material for the optimization course of the Master in Data Analytics Intelligence (MIAD), with Prof. Andrés Medaglia; tutored the programme's first cohort (Aug 2021).

Marketing Analytics Intern, Latin America Region

01/2020 – 06/2020

Intel Corporation

Bogotá

- Built marketing-analytics reporting and dashboards for the regional team (Optane/Gaming reports, spending reviews).

PROJECTS

Origin–destination matrices from smart-card data for Bogotá's BRT and bus network*current contract 02/2026 – 11/2026*

TRANSMILENIO S.A., Dirección Técnica Zonal · remote services contract, invoiced in Colombia

with Alejandro Palacio

Maintained and extended an O-D estimation pipeline originally developed by a Universidad de los Andes research group with TRANSMILENIO: bug fixes, precision improvements, quality-control checkpoints and new outputs (load profiles, demand-rotation index). R and SQL on GCP BigQuery; runs daily in about 15 minutes end to end at near-zero marginal cost. Of about 3.8 million validations on a weekday (13 Feb 2026), about 68 % are chained to a destination before expansion and 97–99 % receive one after it. Used for new-route planning, weekend route redesign and daily dispatch. Published with attribution to TRANSMILENIO S.A.

Metaheuristics suite (Python, public)

github.com/robayo/metaheuristics

Six algorithms with statistical calibration: path scanning (CARP), local search (ATSP), simulated annealing (n-queens), genetic algorithm (CVRP), iterated local search (multidimensional knapsack), large neighbourhood search (PDPTW).

EDUCATION

Universidad de los Andes¹

Bogotá

Magíster en Ingeniería Industrial (M.Sc. Industrial Engineering; concentration: operations research and applied statistics), cum laude

08/2021 – 12/2022 (degree conferred 04/2023)

Thesis-based master's, begun in parallel with the B.Sc. (graduate courses 2019–2021 credited). GPA 4.84/5.0 (≈ 1.2 on the German scale, modified Bavarian formula). Thesis, 5.0/5.0: "Association between HPV vaccination in Colombia and the risk of incident chronic disease" — self-controlled case series, conditional Poisson regression, 55,114 vaccinated girls (advisor Carlos F. Valencia). Graduate coursework: Advanced Optimization (column generation, Lagrangian relaxation), Network Flows, Metaheuristics, Statistical Learning for Data Analytics, Linear Statistical Models, Advanced Topics in Statistics, Machine Learning.

Ingeniero Industrial (B.Sc. Industrial Engineering, ABET-accredited), cum laude

08/2016 – 12/2020 (degree conferred

04/2021)

GPA 4.53/5.0 (≈ 1.7). Minor in International Studies. Thesis, 5.0/5.0: "A multi-criteria optimization model for bridge-intervention planning" — MILP over $\sim 1,500$ national bridges within an INVIAS–Uniandes–Javeriana agreement (gurobipy; advisor Andrés Medaglia). Teaching assistant, Principles of Optimization and Finance, 2018–2019; research assistant, INVIAS bridge-management project, 2020.

Secondary education · Ontario Secondary School Diploma, Hillcrest High School, Ottawa (02–06/2016) · Bachiller, Colegio de la Enseñanza, Bogotá.

TEACHING

- Teaching assistant, Optimization course of the Master in Data Analytics Intelligence (MIAD), Universidad de los Andes on Coursera · 03/2021 – 06/2022 · with Prof. Andrés Medaglia.
- Undergraduate teaching assistant, Principles of Optimization (2018-2, 2019-1, 2019-2) and Finance (2019-2): official assignment solutions (Xpress-Mosel), grading tools (VBA), training sessions.
- Research assistant (2020-2), INVIAS bridge-management research project (contract VICE 3001).

LANGUAGES

Spanish (native) · English (fluent; secondary school in Canada, Ontario Secondary School Diploma 2016; five years working in English) · German (Goethe-Zertifikat A2, Nov 2025, 88/100; B2 course in progress) · French (B1, self-assessed).

WORK AUTHORIZATION AND AVAILABILITY

Work authorization: based in Berlin; eligible for an in-country switch to an EU Blue Card.

Availability: Available full-time immediately; no notice period. Current engagements end on signing: the TRANSMILENIO services contract ends 16 Nov 2026; the LifeOne contract ends when I start.

¹ Universidad de los Andes is listed H+ in anabin; "Ingeniero Industrial" is rated equivalent to a four-year German bachelor's degree (anabin, Oct 2026). Both degrees verifiable at vericerti.uniandes.edu.co.