Daniel Bello, M.Eng.

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Education

2018 – 2020 **Master's degree in Engineering, Universidad Nacional Autónoma de Mexico**
GPA: 3.7/9.2 | Thesis Title: *Characterization of Petroleum Fractions with the PC-SAFT Equation of State (Programming in Fortran and data analysis with Power BI and Python) (2024).*

2013 – 2018 **Bachelor's degree in Chemical Engineering , Universidad Veracruzana**
GPA: 3.0/8.6 | Graduation: *Satisfactory Performance Testimony on National Professional Exam (EGEL-CENEVAL).*

2010 – 2013 **IT Support Specialist, Colegio de Bachilleres 17**.
Graduation: *CompTIA Strata IT Fundamentals Certification*

Professional Experience

Apr 2025 – Present **Founder & Data Engineer / Data Scientist. Data Reactor,** *Remote*
- Designed and launched the venture's website, focusing on data services for the energy and industrial sectors.
- Engineered scalable data architectures using Spark (Databricks), Informatica Power Center, Snowflake, Terraform and Airflow for automating ETL/ELT pipelines from diverse sources like IoT, cloud storage (AWS S3, Azure), and databases.
- Developed custom data solutions in Python and Fortran on multi-cloud platforms (AWS, Azure), integrating machine learning with thermodynamic models to deliver specialized analytics.

May 2021 – Present **Data Engineer / Data Scientist. Freelance,** *Remote*
- Developed end-to-end data pipelines using Spark (Databricks, EMR), IPC and Airflow, warehousing data in Snowflake and Redshift for large-scale processing.
- Built and optimized dashboards in Power BI, Tableau, and Looker with direct connections to Snowflake for real-time KPI and sales analysis.
- Engineered scalable ETL/ELT workflows in Python (Pandas, Spark) to automate data transformation and ingestion from sources like S3 and HDFS.
- Implemented data cleaning routines and predictive models on multi-cloud platforms to support key business decisions.

Professional Experience (continued)

Feb 2021 – Present

Professor & Consultant Engineer. Superprof, *Remote*

• **Instructed courses in:**
Numerical Methods (Python), Chemical Process Simulation (Aspen One), Programming for Engineers (Python & Fortran), Thermodynamics. Introduced fundamentals of big data processing and modern data warehousing with Spark, Hadoop, and **Snowflake** to graduate students.

• **Delivered engineering solutions:**
Developed custom Excel/VBA tools for industrial applications (Gas Processing & Process Control), and prototyped data orchestration workflows with Airflow for sample industrial datasets.

Mar 2017 – Mar 2018

Acetyl's Plant Production Trainee. Celanese, *Coatzacoalcos, Veracruz.*

• **Operational Data Monitoring & Analysis:**
Tracked and evaluated real-time production data (yield, process parameters, quality metrics) to detect inefficiencies, generate diagnostic reports, and drive process optimization decisions.

• **Developed two operational improvement projects using plant data analytics:**
–Reactor Conversion Control Dashboard (Excel/VBA) for real-time monitoring.
–Energy Model Optimization (Minitab/PI ProcessBook) to enhance predictive accuracy.

Jan 2016 – Jan 2017

Production Resident. Pemex (Morelos Complex), *Coatzacoalcos, Veracruz.*
Analyzed real plant data to monitor reaction train temperatures and identify operational trends, creating insightful dashboards in Excel and Power BI to support decision-making.

Portfolio

Mar 2025 – May 2025

Mass Balance in Gas Desulfurization Tower. Felipe Bueno

• **Tools:** AWS Glue; Amazon Redshift; PySpark on Amazon EMR; Docker; Power BI.

• **Insights & Conclusions:** Automated ETL reduced processing time by 60%, enabling real-time sulfur mass reporting and faster operational adjustments. Enhanced data accuracy and offered predictive alerts that preemptively flagged deviations, contributing to a 10% improvement in sulfur compliance metrics.

Portfolio (continued)

Jan 2025 – Apr 2025

Natural Gas Liquefaction Optimization. José Rivera

- **Tools:** Azure Data Factory; IPC; Docker; Tableau.
- **Insights & Conclusions:** Early anomaly detection cut alert latency by 75%, improving energy efficiency and process reliability. This led to a 5% reduction in overall power consumption and increased throughput consistency across production cycles.

Jan 2025 – Mar 2025

Financial Health Report. Edge Capital Analytics

- **Tools:** Google Cloud Storage; BigQuery; PySpark; Power BI.
- **Insights & Conclusions:** Streamlined data pipeline delivered financial metrics in under 15 minutes, leading to actionable liquidity improvements. Accelerated insight generation supported dynamic cash flow reallocations, resulting in a 7% uplift in working capital utilization.

Nov 2024 – Jan 2025

Chemical Reactor Modeling & Monitoring. Mesk Alarmali

- **Tools:** IPC; PySpark; Docker; Power BI.
- **Insights & Conclusions:** Real-time monitoring predicted catalyst drift, increasing reactor stability by 12%. Proactive adjustments based on live data trends reduced off-spec product incidents by 8%.

Sep 2024 – Nov 2024

Inventory Control & Replenishment. HealthCare Logistics Co

- **Tools:** AWS Glue; Amazon Redshift; PySpark; Tableau.
- **Insights & Conclusions:** Dynamic forecasts reduced critical stockouts by 40%, ensuring consistent supply availability. These models also optimized reorder points, lowering excess inventory holding costs by 15%.

Jan 2024 – Oct 2024

Predictive Petroleum Fluid Behavior Model

Daniel Bello (Master's Thesis)

- **Tools:** AWS Redshift; PySpark; Docker; Amazon Athena; Power BI, FORTRAN.
- **Key Contributions:**
  - Reduced data processing time by **70%** with automated pipelines.
  - Achieved **98%** prediction accuracy across datasets.
  - Detected **12%** outliers using PySpark, improving data integrity.

Portfolio (continued)

Sep 2023 – Nov 2023

Production KPI Monitoring. Valley Foods Manufacturing

• **Tools:** Apache Airflow; PySpark; Docker; Tableau.

• **Insights & Conclusions:** Identified a 12% drop in night shift availability and optimized maintenance scheduling, increasing uptime. The revised maintenance windows improved shift performance metrics by 9% and reduced emergency interventions by 20%.

May 2023 – Jul 2023

User Retention Analysis. EasyPay Fintech Solutions

• **Tools:** BigQuery; PySpark; Docker; Power BI with DAX.

• **Insights & Conclusions:** Churn model flagged 65% risk users (<3 transactions/30d), guiding targeted campaigns. Tailored retention strategies based on segmentation increased repeat transaction rates by 18%.

Sep 2022 – Nov 2022

Energy Cost Optimization. MetalForge Industries Ltd

• **Tools:** IPC; Apache Airflow; Power BI.

• **Insights & Conclusions:** Analyzed energy consumption patterns, revealing that nighttime peaks from non-critical machinery accounted for 18% of the total cost. Strategically rescheduling these operations resulted in an 8% reduction in energy costs and an improved plant load balance.

Mar 2017 – Mar 2018

Operational Improvement Projects at Acetyl Plant. Celanese Mexicana

• **Tools:** Excel with VBA, OsiSoft PI ProcessBook, Python

• **Insights & Conclusions:** Achieved real-time visibility of critical process variables and developed a predictive maintenance model with 92% accuracy, reducing unscheduled downtime by 15%. This optimization boosted operational efficiency and overall plant throughput. The predictive model insights also informed spare parts stocking, cutting lead times by 20% and maintenance costs by 12%.

Skills

Languages

Strong reading, writing and speaking competencies for English.

Programming & Data Manipulation

Python (Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn; TensorFlow, Keras, PyTorch), R (dplyr, ggplot2), Fortran; Minitab, Matlab, Wolfram Mathematica; Git, GitHub.

Databases

MySQL, PostgreSQL, Microsoft SQL Server, MongoDB.

Skills (continued)

Data Platforms & Big Data	Informatica Power Center, Docker, Kubernetes, Snowflake, Apache Spark, Apache Airflow, Terraform, Hadoop Ecosystem, Azure (Data Factory, Databricks), AWS (S3, Redshift), GCP (BigQuery, Vertex AI).
Business Intelligence & Visualization	Advanced Excel/VBA, Power BI (Data modeling, DAX, Report creation), Tableau, Jupyter Notebooks, Looker.
Soft Skills	Problem-solving, Analytical Thinking, Attention to Detail, Teamwork & Collaboration, Adaptability, Self-learner, Resilience, Communication.
Others	Windows 11, Mac OS 15.5, Ubuntu, Academic research, teaching, training, LaTeX , Office 365, Zoom, Teams.

Honors and Certifications

Awards and Achievements

2012 **Second Place**, In the Veracruz State phase of Informatics Competition, Boca del río, Veracruz.

2013 **Bronze medal**, In the Veracruz Olympics of Computer Science, Xalapa, Veracruz.

2016 **Laudatory note to the academic performance**, Universidad Veracruzana.

2017 **Chemical Engineering (EGEL–CENEVAL)**, Approval of the professional Exam. Result: satisfactory testimony.

2018 **Graduate Scholarship**, Obtaining scholarship from the Mexican National Council of Science and Technology (Conacyt).

Certification

2012 **CompTIA Strata IT Fundamentals**.

2017 **Toefl iBT English Certification**. 550 points.

2025 **Google Data Analytics Professional Certificate.** Coursera Platform.

English First Certification (C2 LEVEL)

Links

- **LinkedIn**
- **Github**
- **Master's Thesis**
- **ResearchGate**
- **Superprof**
- **Portfolio**
- **Master's degree**
- **Projects**
- **Bachelor's degree and Certificates**
- **English First Certification (C2 LEVEL)**