

Mohammed Nabil

Data Engineering & Analytics, Upstream Oil and Gas

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SUMMARY

Data engineering and analytics leader with long experience in data platforms, analytics engineering, machine learning and GIS / spatial development. Built the data platform of an upstream oil and gas investor in non-operated assets, and know well, production, reserves, joint interest billing, revenue and spatial data closely. Moved from lead and staff engineer to manager to director, and still design, code and ship hands-on.

SKILLS

Oil and gas data: Well headers and production volumes, reserves and economics (ARIES), joint interest billing (EnergyLink), revenue and accounting data (W Energy, OGsys), revenue and expense streams (AFEs, LOE, CAPEX, marketing and gathering), working and net revenue interests, public well data (Enverus, Novi, WellDatabase)

GIS and spatial: Spatial data pipelines and spatial analysis, PostGIS, Esri ArcGIS, ArcPy, well locations and well paths, converting text and tabular sources into spatial layers, spatial scoring models

Leadership and management: Team building and hiring, coaching and mentoring, people management (compensation and budget), strategy, roadmap and OKRs/KPIs, technical product management, stakeholder alignment, remote collaboration across time zones

Data platform: Snowflake (administration, role-based access control, performance tuning, cost management, Snowpark, Cortex), dbt (models, tests, documentation, lineage), advanced SQL, Python, PySpark

Architecture and governance: Dimensional modeling, medallion-style layered architecture, data marts, semantic layer, SCD2 history tables, data quality testing, data catalog and lineage

AI and LLMs: Large language models (Claude), Claude Code, LangGraph, Model Context Protocol (MCP), Snowflake Cortex, AI agents

Machine learning: scikit-learn (regression, classification, clustering), time-series segmentation, deploying models with feature and prediction logging

BI, databases and cloud: Spotfire, Power BI, SQL Server, PostgreSQL, Microsoft Azure, Git, Azure DevOps (CI/CD)

Also evaluated hands-on: CrewAI, Apache Airflow, Dagster, Apache Spark, Databricks

WORK EXPERIENCE

Director of Data Engineering

Jan 2023 – Present

Raisa Energy, Cairo, Egypt / Denver, US

- Built Raisa's data engineering team from scratch to up to seven engineers, and lead it hands-on in architecture, design and code.
- Own hiring, compensation and the team budget, and contribute to company-level budget planning.
- Shape company strategy, roadmap and OKRs/KPIs with the leadership team, working remotely with the reserves, subsurface and accounting teams in Denver.

Key deliverables

- **Spatial data pipelines:** Build and run spatial data pipelines and spatial analysis with PostgreSQL / PostGIS and Esri ArcGIS (ArcPy), so spatial data sits in the same platform as the well, production and financial data.
- **Public well data layer:** Combined US well headers and monthly production volumes from Enverus, Novi and WellDatabase into one consistent dataset.
- **Financial data layer:** Combined joint interest bills from EnergyLink with costs, revenue and production volumes from W Energy in one model that is easy to query.
- **JIB pre-approval audit:** Built an AI-assisted audit that runs around 40 checks on each joint interest bill before payment, for example working interest and decimal mismatches, duplicate billing, prior-period charges and overhead variances. Cut the review by the reserves and subsurface teams from days to hours.
- **Well bounding score:** Built scoring models and indicators from engineering, financial and production data to support investment decisions. The bounding score measures how surrounded each well is by nearby wells and the risk of losing production when new wells are drilled close by, from spatial features such as wells within a distance, distance to the nearest well, and neighbours' cost and production. Used to approve or reject funding requests for new wells.
- **Reserves run snapshots:** Centralized the ARIES reserves and economics runs. Each run is snapshotted into Snowflake and a dashboard shows the changes between any two runs, which cut the comparison from days to hours. Used by the whole company.
- **AI analytics platform:** Built an MCP (Model Context Protocol) server and semantic layer on Snowflake Cortex, with Azure AD single sign-on and role-based access, so AI assistants can answer questions about JIBs, accounting, public wells and company-owned wells.

- **Warehouse, governance and operations:** Designed the Snowflake warehouse in layers (a custom medallion architecture with dimensional modeling) with data marts for each team, role-based access control, dbt tests and lineage. A configuration-driven extract-and-load framework syncs only changed tables and keeps SCD2 history. Used by several teams across land, subsurface, reserves and accounting.
- **AI agents and LLM tools:** Built AI agents and LLM tools for reporting, text-to-SQL, questions on financial data and extracting data from PDF files; moved from CrewAI to LangGraph for tighter control of agent flows. Mentored an intern who built an agentic reporting tool.

Data Engineering Manager

Jan 2022 – Dec 2022

Raisa Energy, Cairo, Egypt / Denver, US

- Promoted to build Raisa's first dedicated data engineering team, separated from the combined data science and engineering team. Hired and onboarded the engineers.
- Led the team to build the Snowflake data warehouse, with the pipelines, tools and dashboards for every team.

Staff Data Scientist (Data Engineering and Machine Learning)

Jun 2018 – Dec 2021

Raisa Energy, Cairo, Egypt / Denver, US

- Ran a hands-on evaluation of Snowflake against Databricks and chose Snowflake. Introduced Snowflake and dbt as the company data platform and designed it end to end.
- Generated synthetic well paths for wells with missing survey points, using regression models to predict the latitude and longitude of the missing points.
- Scraped permitted well locations from the Colorado state website and converted them from text to a spatial layer.
- Built an operator assignment model that predicts which operator will drill a well in a specific location, and the pipeline that collects operator activity from different sources.
- Built a well operating cost (LOE) model that predicts the monthly cost per well, using time-series segmentation and a regression model for each segment.
- Deduplicated landowner records from legal documents using clustering and classification, and built a framework to deploy machine learning models to production.

GIS Development Manager

Nov 2015 – May 2018

Link Development, Cairo, Egypt

- Owned the technical direction of GIS development, mentored one direct report and coordinated with engineers in other teams.
- Built GIS and spatial analytics projects, chatbots and machine learning work, including clustering families in the Egypt Census 2017 data.

Technical Lead / Senior Developer

Oct 2005 – Nov 2015

Esri Northeast Africa, Cairo, Egypt

- Led a team of up to nine engineers across front end, back end and spatial data analysis, and ran the Agile Scrum process.
- Built Esri ArcGIS systems, including vehicle tracking for more than 200 vehicles (El Ahsa Municipality, KSA) and a spatial homeland security system for Bahrain, the Geographical Security System (GSS).

EDUCATION

Professional Diploma in Management of Technology

2022

Nile University, Graduate School of Management of Technology, Cairo, Egypt

Bachelor of Computer Science

2004

Cairo University, Faculty of Computers and Artificial Intelligence, Cairo, Egypt