

HEBERTO G. SALINAS

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Research Interests

Applied mathematics and optimization; statistical learning for high-dimensional and real-time operational data; controlled computational studies of methods.

Education

M.S. Data Science | Texas Tech University | May 2025

B.S. Mathematics, Minor in Economics | Texas A&M International University | May 2011

Research

Optimal Solution to a Transformation Problem of a Triangular Array | Manuscript, 2026

- Reduces the coin-triangle inversion problem to a nearest-integer-point problem, recovering the minimum and every optimal configuration, and extends the argument to d-dimensional piles with exhaustive computational verification. Revised from a 2010 undergraduate paper.

Choosing PCA Components in High Dimensions: The Calibration–Power Trade-off Between Parallel Analysis and Spectral Thresholding | Technical report, October 2026

- Simulation study of 686,500 datasets comparing false retention and detection power of parallel analysis and Marchenko–Pastur thresholding under Gaussian spiked covariance models.

Same Data, Different Representation: An Empirical Study of Target Transformation in Rate-of-Penetration Prediction | Technical report, August 2026

- Controlled comparison of raw and log-transformed targets for rate-of-penetration prediction on three Utah FORGE wells, five model families, and expanding-window validation.

Professional Experience

Data Scientist Advisor, Drilling Department | Continental Resources, Oklahoma City, OK | Aug 2025 – Present

- First data scientist embedded in the drilling organization; leads the company's first internal drilling intelligence platform and was asked to design the roadmap and hiring plan for a new Data Science group.
- Built real-time pipelines streaming rig electronic drilling recorder (EDR) data into Databricks, curating ~1,000 raw channels into production tables containing billions of 1-second records.
- Developed and deployed statistical and machine learning models for drilling performance and equipment failure prediction, with real-time alerting.

Drilling Engineer | Lewis Energy Group, San Antonio, TX | Oct 2020 – Aug 2025

- Planned and executed complex wells (underbalanced, extended-reach, HPHT) with real-time engineering support across multiple rigs; initiated cross-domain studies integrating petrophysical, geomechanical, and drilling data to predict hydraulic-fracturing inconsistencies.

Earlier Drilling Roles | Lewis Energy Group & Halliburton | Jul 2011 – May 2020

Field Drilling Engineer / Wellsite Supervisor, Drilling Fluids Supervisor, and Drilling Fluids Engineer.

Technical Skills

Programming & Data: Python, SQL, R; pandas, NumPy, SciPy, scikit-learn, XGBoost, PyTorch

Methods: Statistical modeling, predictive analytics, retrieval-augmented and multi-agent LLM systems

Platforms: Databricks (Unity Catalog, Delta Sharing), PostgreSQL, Git/GitHub

Languages: English and Spanish (native)