Alexander Verde – Data Scientist

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PROFILE

Advanced-degree Data Scientist with 7+ years in Upstream and Midstream operations, bridging the gap between research and industrial application. I engineer automated data pipelines for predictive modeling and BI, supporting critical decision-making for major E&P operators. By deploying ML models with **95%+ accuracy** to predict failures for **2,000+ assets** with at least **8 hours in advance**, I have reduced annual maintenance costs by **$1.5M** while maintaining **100% EPA compliance**.

Data Science Specialization and Certification: SEEQ Analytics Engineer, Data Engineering, Machine Learning, Modern Big Data Analysis with SQL, Data Science with Databricks for Data Analysts, Deep Learning, AVEVA PI.

PROFESSIONAL EXPERIENCE

Data Scientist III (Process Engineering Group and Air Team)

Chevron, 11/2024 - 11/2025, Houston - Texas (Remote)

- Emissions Control: Engineered gas venting dashboards, reducing detection time by **70%** and preventing **$250k+** in EPA fines.
- Reliability: Reduced VRU downtime by **22%** through automated malfunction alerts, saving **$100k+** in annual production losses.
- Production: Identified a **15%** output increase through backpressure analysis, driving **$300k+** in incremental regional revenue.
- Operations: Scaled automated reporting across TX/NM, boosting productivity by **15%** and reducing well-kill incidents by **10%**.
- Skills: PI System, SEEQ, Python, Azure, Power BI, D2, PI Vision, SharePoint, Copilot.

Independent Data Science Consultant

Freelance, 08/2023 - 10/2024, Remote

- Professional Development: Completed **40+ advanced AI/ML certifications**, earning **26 PDH credits** for continuous education.
- Strategic Proposals: Engineered **10+ technical proposals** for data solutions to potential clients across energy and finance sectors.

Senior Data and AI Engineer (R&D and AI Engineering Group)

Capgemini, 01/2023 - 07/2023, Duncan - Oklahoma (Remote)

- Predictive Maintenance: Engineered data pipelines for reciprocating pumps that predict failures **8 hours in advance**, reducing emergency repair costs by **15%**.
- Energy Optimization: Leveraged SEEQ to identify climate-driven efficiency losses, potentially cutting compression power consumption of cooling towers by **20%** and saving **$30k+ annually**.
- Digital Transformation: Automated SEEQ workflows for **50+ users**, boosting monitoring productivity by **30%** and accelerating performance optimization across multiple assets.
- Skills: AVEVA PI, SEEQ, Python, AWS, Anomaly detection, Fault diagnostics, Time-series, NoSQL, JIRA, GIT.

SQL-Python-Spark developer (Technology & EHS Group)

Devon Energy, 10/2021 - 10/2022, Duncan - Oklahoma (Remote)

- Cloud Data Engineering: Deployed Snowflake and Databricks ETL pipelines for GHG tracking, reducing reporting cycles by **90%** and ensuring **100% EHS compliance**.
- Regulatory Compliance: Managed corporate EPA emissions reporting to achieve perfect alignment with GHG technical standards.
- Library Development: Engineered production-level Python libraries using NumPy/Pandas, accelerating CO_2 calculation speeds by **50%** through modular refactoring.
- Emissions Analytics: Automated Scope 1 & 2 monitoring, transforming flaring and drilling data into CO_2e metrics with **99.9% calculation accuracy**.
- Skills: Azure Data Factory, Databricks, Snowflake, PySpark, PyTorch, Python, SQL, VS Code, GitHub, Agile, CI/CD, Docker.

Senior Research Assistant Faculty (Reservoir Geomechanics and Seismicity Research Group)

University of Oklahoma, 10/2020 - 06/2021, Norman - Oklahoma (Hybrid)

- HPC Optimization**:** Extended 3D EGS numerical codes for parallel execution, reducing computational time by **55%** and enabling **2x faster** model iterations.
- Geothermal Design: Conducted sensitivity analyses on multi-well configurations, validating a **15% increase** in heat extraction efficiency for pilot tests.
- Technical Leadership: Mentored PhD candidates through complex data interpretation, accelerating research milestones.

- Skills: Fortran, HPC, Slurm.

Principal Engineer - Data Analytics (Equipment Reliability Group)
Halliburton Technology Center, 01/2018 - 12/2019, Duncan – Oklahoma
- Data Engineering & ML**:** Engineered automated pipelines for **terabyte-scale data**, deploying physics-based ML with **95% accuracy**. This system reduced annual costs by **$1.5M** across two districts by optimizing failure prediction.
- BI & Reliability**:** Built real-time dashboards for **2000+ assets** to automate reliability analysis. These tools synchronized field data and accelerated strategic decision-making by **35%** across the organization.
- Cloud & TCO**:** Supported a corporate cloud migration with **99.9% uptime**, cutting system downtime by **20%**. Developed **90% accurate** ML TCO models to identify critical components and forecast maintenance costs for high-utilization fleets.
- Skills: GCP, Oracle, R, Python, SQL, Hadoop, Spotfire, SAP, Predictive maintenance, CBM, Root Cause Analysis, Time-series.

Postdoctoral Research Associate (Carbon Capture, Utilization and Storage Group)
Texas A&M University, 04/2016 - 03/2017, College Station -Texas
- Micromechanical Analysis: Developed a non-destructive nanoindentation technique for organic shale, achieving **90% accuracy** and reducing characterization costs by **30%**.
- Experimental Design: Engineered a CO2 fluid-rock batch reactor supporting **12+ CCS projects**, increasing experimental throughput by **40%**.
- Skills: Python, Nanoindentation, Carbon Sequestration.

Petroleum Engineering Consultant
Frontender Corporation, 06/2014 - 02/2016, Houston -Texas
- Technical Consulting**:** Delivered **5+ data-driven projects** for global O&G operators, optimizing recovery and cutting simulation time by **50%** while improving accuracy by **20%**.
- Professional Training: Led engineering and analytics courses for **100+ professionals**, accelerating digital tool adoption.
- Skills: MATLAB, Tableau.

Graduate Research Assistant (Petroleum Engineering Department)
Texas A&M University, 06/2011 - 12/2013, College Station -Texas
- Simulation Optimization**:** Accelerated reservoir modeling via fast convolution, cutting computational time and memory by **85%** and increasing throughput by **4x**.
- Skills: Fortran, MATLAB, C, C++, Mathematica.

Senior R&D Engineer
Applied Computing Institute, 08/1999 - 05/2009, Maracaibo - Venezuela
- R&D & Consulting: Led R&D for national oil companies, using AI and clusters to optimize recovery processes and efficiency by **15%**. These initiatives successfully reduced simulation costs by **40%** through advanced computational optimization.
- Professional Development: Delivered data mining and engineering training to **300+** professionals, enhancing industry-wide technical competencies. This program accelerated data-driven decision-making, increasing team analytical throughput by **25%**.
- Skills: CFD, MATLAB, ML, Statistics.

EDUCATION

Ph.D. Petroleum Engineering, GPA: 3.91/4, Texas A&M University, College Station, TX
Dissertation: Fast multipole displacement discontinuity method for geomechanics reservoir simulations

M.Sc. Mechanical Engineering (Computational Fluid Dynamics – CFD), University of Zulia, Venezuela
Thesis: Development of a pseudo-tridimensional (P3D) hydraulic fracturing simulator in oil wells

B.Sc. Mechanical Engineering, University of Zulia, Venezuela

PUBLICATIONS AND AWARDS

- Scientific Impact**:** Authored **30 publications and patents** with **300+ citations**, improving operational modeling accuracy by **20%** through advanced upstream data analytics.
- Professional Distinction: Secured a **US NIW** and multiple "Best Paper" awards for novel scientific contributions.