KALEB ENDALE

Data Analytics Professional | Machine Learning Engineer | Energy Sector Specialist

📍 Edmonton, Alberta, Canada

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PROFESSIONAL SUMMARY

Google-certified Data Analyst and Data Scientist with 13+ years of progressive experience transforming complex operational, sensor, and IIoT data into actionable business insights across the energy sector. Expert in Python, R, SQL, machine learning, and advanced analytics with proven track record developing production-grade predictive models, automated reporting systems, and real-time data monitoring platforms that delivered $500K+ in cost savings and prevented $2M+ in operational losses. Deep domain expertise in oil & gas operations (MWD/LWD, SAGD, hydraulic fracturing, acoustic monitoring, SmartPAD™ systems, frac tree monitoring) combined with modern data science capabilities uniquely positions me to bridge field operations and advanced analytics. Skilled at translating technical complexity into executive-ready insights, remote troubleshooting, and collaborating across multidisciplinary teams. Currently focused on applying analytics to energy transition, digital transformation, and decarbonization challenges.

CORE TECHNICAL SKILLS

Programming Languages

Python (pandas, NumPy, SciPy, scikit-learn, TensorFlow, Keras, Matplotlib, Seaborn), R (dplyr, tidyr, ggplot2, caret), SQL (Advanced), JavaScript, Linux/Unix Shell Scripting

Machine Learning & AI

Supervised Learning (Random Forests, XGBoost, Gradient Boosting, SVM), Unsupervised Learning (K-Means, DBSCAN, Autoencoders, Isolation Forests), Neural Networks, Deep Learning, Feature Engineering, Hyperparameter Tuning, Model Deployment, MLOps

Statistical Analysis

Hypothesis Testing, Regression Analysis (Linear, Logistic, Polynomial), Time-Series Forecasting (ARIMA, Prophet, LSTM), Signal Processing (FFT, STFT, Wavelet Transforms), Bayesian Methods, A/B Testing, Experimental Design, Predictive Modeling

Data Visualization & BI

Tableau, Power BI, Matplotlib, Seaborn, Plotly, ggplot2, Dashboard Design, KPI Development, Executive Reporting, Data Storytelling, Interactive Visualizations

Database & Data Engineering

SQL Server, PostgreSQL, Database Design, ETL Processes, Data Pipeline Development, Data Cleaning, Data Wrangling, API Integration (REST), Big Data Processing, Data Quality Management, Cloud Data Streaming

Tools & Platforms

Git/GitHub, Jupyter Notebooks, Docker, Cloud Computing (AWS/Azure), Linux, Excel (Power Query, VBA, Advanced Functions), Model Monitoring, Version Control, Microsoft Office Suite

Technical Support & Operations

Remote Troubleshooting, Help Desk Support, Technical Assistance, Customer Support, Diagnostic Techniques, Problem-Solving Processes, Documentation, Incident Logging, Training & Mentoring, Stakeholder Communication

Networking & Systems

TCP/IP Networking, Serial Communications, Cloud Connectivity, Computer Networking, Data Transmission, Wireless Technologies, IIoT Smart Technology, SCADA Systems Integration

Business & Analytics

Requirements Gathering, Stakeholder Management, Cross-Functional Collaboration, Process Optimization, Root Cause Analysis, Project Management, Technical Documentation, Customer-Oriented Mindset

Energy Sector Expertise

MWD/LWD Technologies, SAGD Operations, Hydraulic Fracturing, Frac Tree Monitoring, SmartPAD™ Systems, Intelligent Underground, Well Integrity Assessment, Acoustic Monitoring, RTOC Operations, Drilling Operations, Completions Operations, Sensor/IoT Data, Sonic Sensors, Pressure Transducers, Valve Positioning Sensors, Industrial Analytics, Safety & Compliance

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PROFESSIONAL EXPERIENCE

RTOC Operator (Remote Technical Support Specialist) / Data Analyst

Cold Bore Technology, Edmonton, AB | 2021 - 2024

- Served as first point of contact for customers and Field Technicians providing technical assistance and support over phone and email for 500+ wells across North America, achieving 92% first-call resolution rate
- Performed real-time frac tree monitoring and data stream analysis for SmartPAD™ and Intelligent Underground systems, analyzing pressure (0-15,000 psi), flow rate, temperature, and acoustic data to identify issues with data collection and enable proactive intervention that prevented 15 well integrity issues valued at $2M+
- Conducted remote troubleshooting using diagnostic techniques, asking pertinent questions to determine best solutions for connectivity issues (serial, TCP/IP, cloud) and equipment problems
- Walked customers and Field Technicians through problem-solving processes for technical issues, documenting all events, problems, and resolutions in comprehensive logs
- Created daily reports for stakeholders communicating system status, incidents, and follow-up actions, improving transparency and decision-making
- Developed Python-based analytics tools for multiservice data integration processing real-time data streams from Frac, Wireline, Coil, Pump Down, Water, and Sand operations
- Built production-grade predictive maintenance models using ensemble machine learning methods (Random Forest, XGBoost) and time-series analysis that forecasted equipment failures 72 hours in advance with 85% accuracy and 0.82 F1-score, reducing unplanned downtime by 25% ($500K+ annual savings)
- Engineered 45+ features from time-series sensor data (sonic sensors, pressure transducers, valve positioning sensors) using sliding windows, statistical aggregations, and domain knowledge, improving baseline model performance by 28%
- Implemented automated retraining pipeline with model monitoring and drift detection, maintaining production accuracy >80% over 18-month deployment period
- Built automated SQL-based reporting system processing 1M+ daily records from multiple independent data sources, reducing report generation time by 40% and enabling real-time dashboards for C-suite decision-making
- Created 12+ interactive Tableau dashboards tracking operational KPIs across 500+ monitoring systems, improving stakeholder decision-making speed by 35% and identifying $200K in cost-saving opportunities
- Designed Python-based ETL pipeline integrating 5 disparate data sources into standardized format, ensuring 99.9% data quality and reducing manual data processing time by 30 hours weekly
- Conducted A/B testing and statistical analysis to optimize operational processes, resulting in 18% efficiency improvement valued at $150K annually
- Analyzed multi-stage hydraulic fracturing data identifying optimization opportunities that improved treatment efficiency by 12% across 80+ wells

- Collaborated with completions engineers, field operators, drilling teams, and customer representatives (OSR) to troubleshoot complex technical issues remotely, maintaining 99.9% system uptime
- Trained 35+ field personnel, Field Technicians, and technical staff on equipment operation, data interpretation, SmartPAD™ functionality, acoustic analysis, SQL queries, dashboard usage, and safety protocols, improving team data literacy by 60%
- Identified and suggested improvements to procedures and workflows, contributing to continuous optimization of RTOC operations
- Maintained customer-oriented mindset and remained even-tempered under pressure while managing multiple simultaneous technical support requests

Field Data Technician / Sonic Analyzer / Data Scientist

Cold Bore Technology, Edmonton, AB | 2016 - 2021

- Rigged up and rigged down sonic sensors, pressure transducers, valve positioning sensors, and additional sensors for SmartPAD™ and Intelligent Underground systems on 500+ wells in Western Canadian Sedimentary Basin (WCSB)
- Collected and input status information for every wellhead on location including Frac, Wireline, Coil, Pump Down, Water, and Sand operations
- Worked as equal with supervisors of each service line (frac, wireline, pump down, sand, water) and customer representatives (OSR), interacting and educating all personnel on location about system functionality
- Pioneered acoustic data analysis methods for well integrity assessment and hydraulic fracturing optimization across 500+ wells
- Built unsupervised learning algorithm using autoencoders and Isolation Forests for real-time anomaly detection in high-frequency acoustic signal data (10kHz sampling rate)
- Applied advanced signal processing techniques (Fast Fourier Transform, Short-Time Fourier Transform, wavelet transforms) extracting 60+ frequency-domain features for machine learning model training
- Reduced false positive alert rate by 60% (from 15% to 6%) while maintaining 100% detection of critical events through threshold optimization and ensemble methods
- Implemented online learning approach enabling model adaptation to changing operational conditions without complete retraining
- Troubleshot connections (serial, TCP/IP, cloud) and tested all Cold Bore equipment ensuring reliable data transmission and communication up-time
- Analyzed 10,000+ operational records using SQL and Python to identify process bottlenecks, implementing solutions that improved efficiency by 30% ($250K annual value)

- Deployed and operated distributed acoustic sensing (DAS) systems for real-time monitoring of multi-stage completions, providing critical data for geosteering and treatment optimization decisions
- Built custom Tableau dashboards integrating pressure, temperature, flow, and acoustic data for real-time visualization enabling immediate response to well integrity threats
- Developed time-series forecasting models (ARIMA, Prophet) for operational optimization achieving Mean Absolute Percentage Error (MAPE) <12% on production data
- Performed exploratory data analysis (EDA) on datasets containing 100K+ records, identifying correlations and trends driving business strategy
- Provided on-the-job training for new personnel and ongoing technical guidance to peers, delegating tasks and reviewing work to ensure quality standards
- Administered kit and surface equipment maintenance including cleaning cables, sensors, and tablets
- Completed and recorded all documentation related to jobs accurately and on time, including Hazard IDs, JSAs, Near Miss incidents, and tailgate safety meetings
- Led field operations for SAGD projects coordinating with operators, reservoir engineers, and Alberta Energy Regulator (AER) ensuring regulatory compliance
- Developed standard operating procedures (SOPs) and technical documentation for acoustic monitoring in completion operations adopted company-wide
- Managed end-to-end data quality assurance program for 500+ data collection points, maintaining 99.9% accuracy through automated validation scripts
- Managed sensor deployment, calibration, data acquisition, and quality control in challenging field environments (H2S, high-pressure, remote locations)
- Conducted root cause analysis on 25+ well integrity incidents using acoustic signatures and pressure data, identifying failure mechanisms and implementing preventive measures
- Maintained and used all appropriate Personal Protective Equipment (PPE) and operated in safe, responsible manner maintaining compliance with all safety regulations
- Transported Cold Bore equipment using personal or rental vehicle and maintained cleanliness of wellsite accommodations and trailers
- Operated as professional and courteous representative of Cold Bore Technology, consistently exceeding customer expectations

MWD/LWD Field Engineer / Operations Data Analyst

Halliburton, Various Locations, Canada | 2011 - 2015

- Led technical operations for Steam Assisted Gravity Drainage (SAGD) well pairs across 40+ pad sites in Alberta oil sands, achieving industry-leading drilling efficiency metrics

- Operated Measurement While Drilling (MWD) and Logging While Drilling (LWD) tools including Magnetic Guided Tools (MGT) for precise wellbore placement maintaining <1m wellbore separation accuracy critical for SAGD operations
- Successfully executed company's first underbalanced drilling (UBD) project using GABI and Pressure While Drilling (PWD) technologies in high-pressure carbonate reservoir
- Supervised real-time data acquisition, mud pulse telemetry, and formation evaluation delivering gamma ray, resistivity, and directional data for geosteering decisions
- Analyzed real-time operational data streams to optimize technical processes and drilling parameters, achieving 15% performance improvement over baseline metrics
- Collaborated with directional drillers, geologists, reservoir engineers, and operations teams optimizing wellbore trajectory achieving target intercepts with 98% success rate
- Built Excel-based reporting systems and dashboards tracking project KPIs, enabling project managers to make data-informed decisions that improved on-time delivery by 22%
- Conducted root cause analysis on operational incidents using statistical methods, identifying trends that led to process improvements saving $180K annually
- Maintained comprehensive well records, daily drilling reports, and regulatory submissions ensuring Alberta Energy Regulator (AER) compliance across 120+ wells
- Achieved 100% safety record across 120+ wells in high-risk environments (H2S >10ppm, pressures >5000psi, extended reach drilling)

Chemical Analyst & Researcher

King's University, Edmonton, AB | 2010 - 2011

- Conducted quantitative chemical analysis using chromatography (HPLC, GC) and spectroscopy (UV-Vis, IR, NMR) generating datasets for statistical modeling and validation
- Developed and validated analytical methods following scientific methodology, experimental design principles, and Good Manufacturing Practice (GMP) requirements
- Applied statistical analysis to experimental data using hypothesis testing and regression analysis
- Authored technical research papers and presented findings to academic audiences
- Maintained rigorous quality control protocols and documented results for regulatory submissions

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MACHINE LEARNING & ANALYTICS PROJECTS

Predictive Maintenance System (Production Deployment)

2022-2024 | Python, scikit-learn, XGBoost, SQL Server, REST API

- Developed ensemble ML model for SmartPAD™ equipment predicting failures 72 hours in advance with 85% accuracy and 0.82 F1-score
- Built REST API for model serving and integrated with monitoring dashboards for real-time predictions
- Delivered $500K+ in cost savings through prevented downtime and optimized maintenance scheduling, achieving 3.2x ROI

Acoustic Anomaly Detection System (Research & Development)

2019-2021 | Python, TensorFlow, Signal Processing, Unsupervised Learning

- Built unsupervised learning algorithm for real-time anomaly detection in sonic sensor data processing 10kHz acoustic streams
- Published internal technical paper detailing algorithm performance and deployment strategy
- Achieved 60% reduction in false positives while maintaining 100% critical event detection for well integrity monitoring

Multiservice Data Integration Platform (Infrastructure)

2021-2023 | Python, SQL Server, Cloud Architecture, ETL

- Architected scalable data pipeline creating, collecting, and structuring independent data sources into standardized format processing 1M+ events daily with <1 second latency
- Built comprehensive monitoring system tracking model performance, data health, data drift, and communication up-time metrics
- Achieved 99.9% system uptime serving 200+ daily users across distributed infrastructure

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EDUCATION

Bachelor of Science in Chemistry

King's University, Edmonton, Alberta

Strong foundation in quantitative analysis, experimental design, statistical methods, and scientific computing

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PROFESSIONAL CERTIFICATIONS & TRAINING

Data Science & Analytics Certifications

- Google Data Analytics Professional Certificate (2024)
- Machine Learning A-Z: AI, Python & R (Udemy)
- The Complete Neural Networks Bootcamp: Theory & Applications
- Artificial Intelligence A-Z: Build 7 AI + LLM & ChatGPT
- 100 Days of Code: The Complete Python Pro Bootcamp
- Complete SQL Bootcamp: Go from Zero to Hero
- The Complete Web Development Bootcamp
- Complete Linux Training Course
- Advanced Statistical Analysis with R

Safety & Regulatory Certifications (Current)

- H2S Alive (Hydrogen Sulfide Safety)
- WHMIS - Workplace Hazardous Materials Information System
- TDG - Transportation of Dangerous Goods
- Petroleum Safety Training
- Standard First Aid & CPR Certification
- Valid Canadian Passport with L1B U.S. Work Visa

KEY ACHIEVEMENTS & IMPACT

- **Cost Savings & ROI:** Delivered $500K+ in prevented downtime through predictive analytics achieving 3.2x return on investment
- **Risk Mitigation:** Prevented $2M+ in well integrity issues through real-time frac tree monitoring and advanced analytics
- **Process Optimization:** Improved operational efficiency by 30% through data-driven process improvements valued at $400K annually
- **Technical Support Excellence:** Achieved 92% first-call resolution rate as first point of contact for customer and Field Technician technical assistance
- **Model Performance:** Achieved 85% accuracy with 0.82 F1-score on production ML models deployed at scale

- **Algorithm Innovation:** Reduced false positive alerts by 60% (15% → 6%) through advanced anomaly detection while maintaining 100% critical event detection
- **Automation Impact:** Reduced report generation time by 40% freeing 30 hours weekly for strategic analysis
- **Data Infrastructure:** Built scalable multiservice data integration platform processing 1M+ events daily with 99.9% uptime and sub-second latency
- **Safety Excellence:** Maintained 100% safety record leading cross-functional teams on 150+ high-risk projects over 13-year career
- **Technical Leadership:** Recognized as subject matter expert (SME) for SmartPAD™ systems, acoustic monitoring, and completion optimization
- **Team Development:** Trained and mentored 35+ technical professionals improving team data literacy by 60%
- **System Reliability:** Maintained 99.9% system uptime and data integrity across 500+ monitoring systems through proactive troubleshooting

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PROFESSIONAL FOCUS AREAS

Energy Transition & Digital Transformation: Actively applying operational expertise and advanced analytics capabilities to energy transition challenges including emissions monitoring and reduction, carbon capture utilization and storage (CCUS) data analysis, methane detection and quantification, renewable energy integration, IIoT smart technology implementation, and digital transformation of traditional energy operations. Committed to leveraging technology, data science, and domain knowledge to support the energy sector's evolution toward sustainable practices while maintaining operational excellence, safety standards, and regulatory compliance.