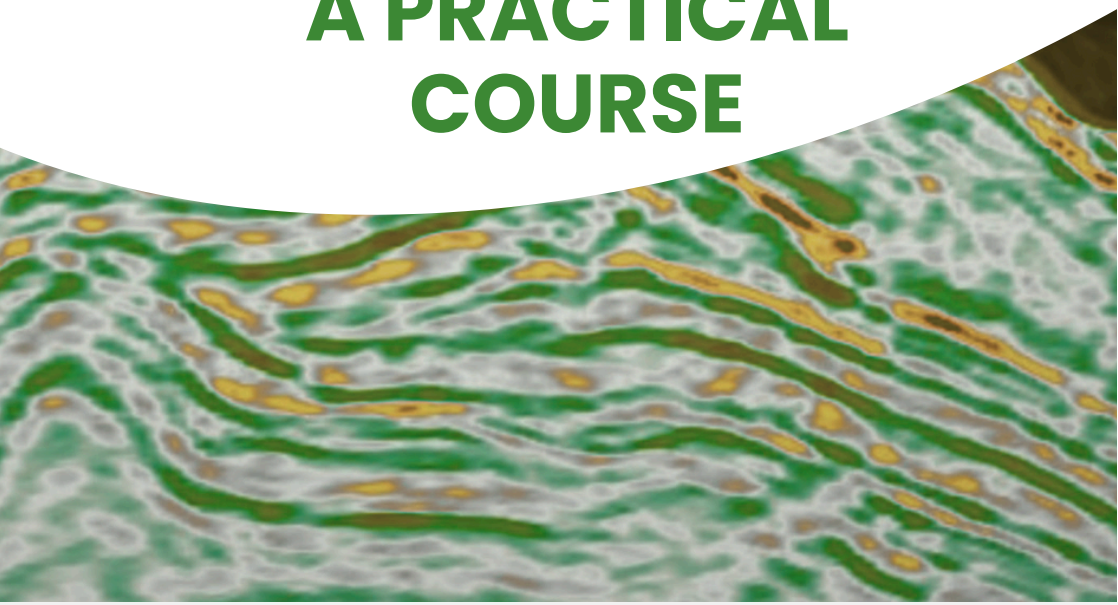
ExploreTerra

Unearth Your Energy Potential

Training

MACHINE LEARNING IN GEOPHYSICS:

A PRACTICAL COURSE



This curriculum is designed to familiarize learners with the fundamentals of machine learning and its practical applications in geophysics.

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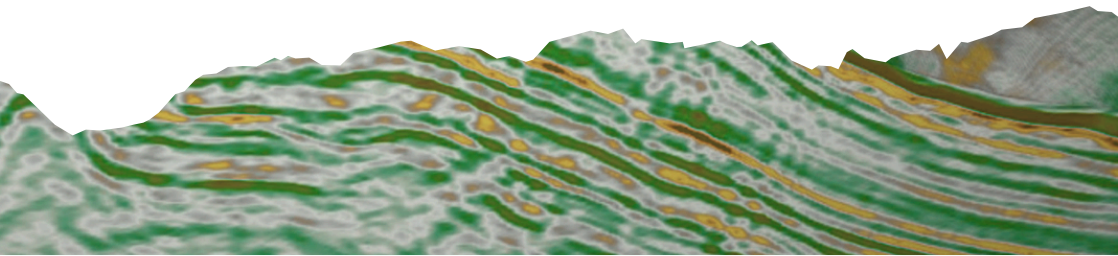
WELCOME!

To provide comprehensive training in Machine Learning geared towards geophysical applications. This curriculum is designed to familiarize learners with the fundamentals of machine learning and its practical applications in geophysics.



SCOPE

- **Duration:** 27 hours spread out over a period of 2.5 month (flexible based on interests and availability)
- **Price per person**: $1500 USD
- **Target Audience:** Geophysicists, geologists, data scientists, and students interested in applying machine learning to geophysical data.
- **Format:** The course will consist of theoretical sessions and hands-on practical exercises, designed to ensure deep understanding and practical know-how.
- **Focus Areas:** Machine learning, Data analysis, Geophysical applications, Python programming.
- **Type or training:** Remote (Teams) or in person.
- **Maximum number of students**: 20
- **Languages:** Available in English or Spanish
- **Software:** Python environment (Anaconda, Jupyter Notebooks)

CONTENT

Module 1: Introduction to Machine Learning for Geophysics

- Overview of machine learning and its applications in geophysics. (3 hours)
- Types of machine learning (3 hours)
- Setting up a Python environment for machine learning (Anaconda, Jupyter Notebooks) hands-on session.

Module 2: Data Preprocessing

- Data collection and dataset creation for geophysical applications (3 hours).
- Data cleaning, normalization, transformation, feature extraction, and selection (3 hours).

Module 3: Regression and Classification in Geophysics

- Linear Regression fundamentals and logistic regression, SVM, decision trees overview (3 hours).
- Building models using well log data and classifying seismic waveforms - hands-on session (3 hours).

Module 4: Clustering, Dimensionality Reduction, and Neural Networks

- K-means, hierarchical clustering, PCA, t-SNE techniques (3 hours).

CONTENT

- Introduction to neural networks, deep learning, and constructing CNNs - hands-on session (3 hours).

Module 5: Time Series Analysis and Unsupervised Learning

- RNNs, LSTMs for time series analysis (3 hours).
- Self-organizing maps (SOMs), anomaly detection in geophysical logs - hands-on session (3 hours).

Module 6: Ensemble Methods and Advanced Topics

- Overview of boosting, bagging, and Random Forests (3 hours).
- Feature engineering, transfer learning, and geo-statistical methods in machine learning (3 hours).

Module 7: Model Interpretation and Course Wrap-up

- Techniques for interpreting machine learning models and predictions (3 hours).
- Evaluating and interpreting model results on geoscientific data with practical exercises (3 hours).

Success Stories:
Justo is a machine learning expert with more than half a decade providing machine learning services.

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YOUR INSTRUCTORS

Justo Rodriguez, PhD

Machine Learning Expert

Machine Learning Engineer, with a PhD in Chemical Physics, and half a decade of expansive experience, contributed to critical projects with renowned clients such as AAMI, Allianz, AstraZeneca, and Quest Diagnostics.

Recognized for leadership in a groundbreaking project in the CGI Global Innovation Challenge, along with a remarkable authorship of 30+ peer-reviewed scholarly articles. Expert in leveraging large language models (LLMs), natural language processing (NLP), and resource-efficient microservices to devise data-centric solutions that have substantially reduced costs and optimized processes in numerous industrial sectors.

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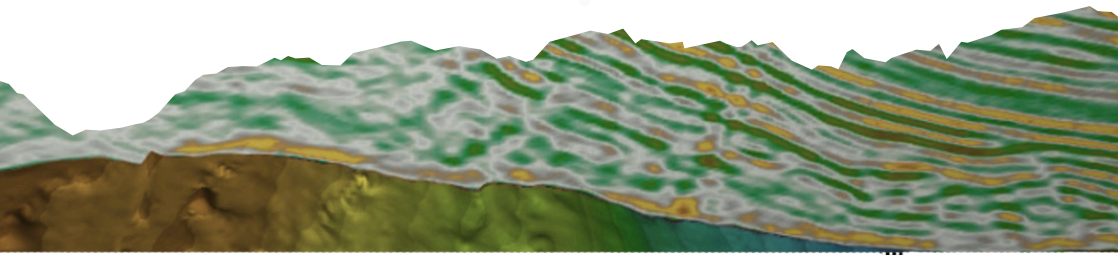
ABOUT **COMPANY**

ExploreTerra's vision is to contribute to the geoscience consultancy and training landscape. Our core purpose is to establish a dynamic platform that creates connections between available talent and opportunities or needs within the energy industry.

We are dedicated to enriching the energy sector through specialized services and empowering geoscientists with technical training, tailored technology transfer, and the adoption of integrated, multidisciplinary best practices.



GET
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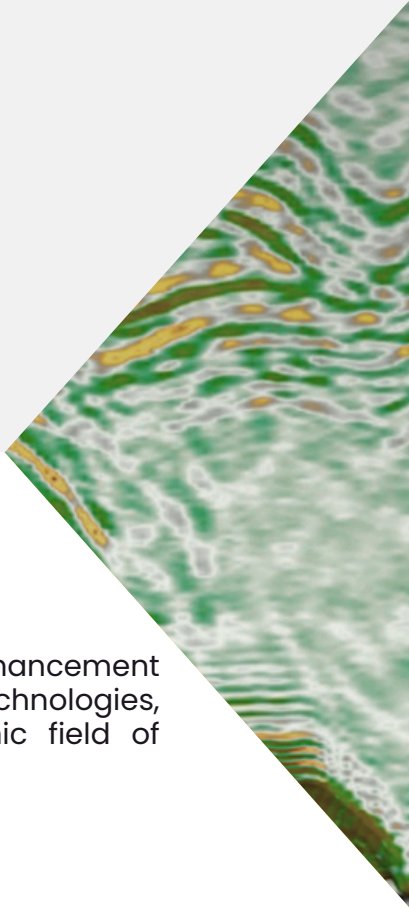

Our training programs, designed by seasoned geoscientists, are tailored to meet contemporary industry needs.

We prioritize technical and core skill enhancement and the incorporation of advanced technologies, equipping professionals for the dynamic field of geoscience.

CONTACT US :

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