

Petrogenium. Academy

Upstream (Geophysics)

Geophysics for Data Scientists

Consultant / Trainer

Jaap Mondt



The **Petrogenium** (in collaboration with EPTS) **Geophysics for Data Scientists** participants will gain practical experience applying machine and deep learning techniques to geophysical problems. Building on their existing knowledge of mathematics and statistics, they will explore advanced topics in seismic and non-seismic data acquisition, processing, and interpretation. By the end of the course, they will be able to apply modern AI and deep learning workflows to predict lithology, pore fluids, and facies, gaining a solid, practice-driven understanding of data-driven geophysical interpretation.



Participants

This **Petrogenium**. course aims at Data Scientists who will be cooperating with geoscientists to develop AI methods for exploration and development of hydrocarbons or mineral resources. Also, application for geothermal and CO2 storage are discussed.



Learning Objectives

At the end of the course participants will have a clear idea of what goes on in Geophysics and how Artificial Intelligence will impact the future of Geosciences. Interactive quizzes using “Mentimeter” are used to enhance the learning.

Programme

Day 1

1. Program, Biography, Teams
2. Moodle, Geophysical Methods
3. Seismic Data
4. Non-Seismic Data
5. Ex Shot raypaths
6. Gravity
7. Magnetics
8. Ex Sampling and Aliasing
9. Ex Field Record
10. Quiz 1
11. Team A preparation

Why select Petrogenium.?

The above support will be provided by principal consultants with 30+ years world-class experience in the technology and hands-on know-how from operation of refinery units.

Contact Petrogenium.:

Email: training@petrogenium.com

Website: <https://www.petrogenium.com/training/>

Because Experience Matters

Programme

Day 2

1. Team A: Summary Day 1
2. Seismic Acquisition
3. Ex Gravity & Magnetics
4. Wave propagation
5. Ex Reflection & Transmissio
6. Seismic Processing
7. Stacking & Migration
8. Ex Correlation & Convolution
9. Ex Diffraction
10. Quiz 2
11. Team B preparation

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Programme

Day 3

1. Team B: Summary Day 2
2. Ex Migration diffraction curves
3. Quantitative Interpretation
4. Ex Migration wavefronts,
5. AVO/AVA
6. Ex Time-Depth-Conversion: Stretch
7. Ex Amplitudes
8. Ex Time-Depth-Conversion: Raytracing
9. Ex Direct Hydrocarbon Indicators
10. Quiz 3
11. Team C preparation

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Programme

Day 4

1. Team C: Summary Day
2. Machine Learning for Geophysics
3. Ex Lith Classification
4. Clustering
5. Ex Facies Clustering
6. DL 4D Brazil
7. Ex Facies-Merged_Reload_Test-Well_Classification
8. Deep Learning for Geophysics
9. Ex Oil Saturation Regression
10. Quiz 4
11. Team D preparation

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Day 5

1. Team D: Summary Day 4
2. You ain't seen nothing yet
3. Ex Salt-Segmentation-CNN
4. Semi-supervised Learning in Geophysics
5. Ex Salt-Segmentation-U-net
6. Inversion versus AI
7. VOI-Geothermal & CO2 Sequestration
8. Ex AI Inversion
9. Quiz 5
10. ChatGPT: questions you never dared to ask!

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