Application of Deep Learning along Directional Image Gathers for High Definition Classification of Subsurface Features

Alan Vigner
Feature Extraction from Directivity Gathers: Deep Learning

Motivation: classify and separate images of different geological features via Deep Learning training and prediction with directivity domain input.
Directional Gathers

Seismic Input Data

\[ U \left( S_x, S_y, R_x, R_y, t \right) \]

- source location
- receiver location

Local Angle Domain Diffraction Ray Tracing

Subsurface Image Gather

\[ I \left( M(x, y, z), \nu_1, \nu_2, \gamma_1, \gamma_2 \right) \]

- image location
- direction dip/azi
- opening angle/azi

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- All Wavefields
- Diffraction Weighted Stack Image
- Deep Learning Fault Classification

Data courtesy of Seitel
Thank you