عنوان مقاله:

Support Vector Machine-based Facies Classification Using Seismic Attributes in an Oil Field of Iran

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خلاصه مقاله:

Seismic facies analysis (SFA) aims to classify similar seismic traces based on amplitude, phase,frequency, and other seismic attributes. SFA has proven useful in interpreting seismic data, allowingsignificant information on subsurface geological structures to be extracted. While facies analysis hasbeen widely investigated through unsupervised-classification-based studies, there are few casesassociated with supervised classification methods. In this study, we follow supervised classificationscheme under classifiers, the support vector classifier (SVC), and multilayer perceptrons (MLP) toprovide an opportunity for directly assessing the feasibility of different classifiers. Before choosingclassifier, we evaluate extracted seismic attributes using forward feature selection (FFS) andbackward feature selection (BFS) methods for logical SFA. The analyses are examined with datafrom an oil field in Iran, and the results are discussed in detail. The numerical relative errorsassociated with these two classifiers as a proxy for the robustness of SFA confirm reliableinterpretations. The higher performance of SVC comparing to MLP classifier for SFA is proved intwo validation steps. The results also demonstrate the power and flexibility of SVC compared .withMLP for SFA

کلمات کلیدی:

Seismic Facies, Support Vector Machine, Multilayer Perceptrons, Seismic Attributes, Classification