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Lithofacies classification of the Barnett Shale gas reservoir using neural network.

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Here, we show the power of the artificial intelligence such as neural network to predict the lithofacies in the lower Barnett shale gas reservoir. The Multilayer Perceptron (MLP) neural network with Hidden Weight Optimization Algorithm is used. The input is raw well-logs data recorded in a horizontal well drilled in the Lower Barnett shale formation, however the output is the concentration of the Clay and the Quartz calculated using the ELAN model and confirmed with the core rock measurement. After training of the MLP machine weights of connection are calculated, the raw well-logs data of two other horizontal wells drilled in the same reservoir are propagated though the neural machine and an output is calculated.

Comparison between the predicted and measured clay and Quartz concentrations in these two horizontal wells shows the ability of neural network to improve shale gas reservoirs characterization.

References

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