The Use of Artificial Intelligence for the Evaluation of Structural Controls on Reservoir Development and Well Placement

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Abstract

The seemingly exponential growth in data volume across many industries and the requirement to analyse this data in an efficient and effective manner has led to a rise in the use of Artificial Intelligence (AI) based applications. By combining multiple advanced technologies, AI enables machines to act with human-like levels of intelligence, taking the information it learns, providing context and meaning, and delivering an appropriate response or solution. The human brain comprises a connected network of neurons so the aim of the Artificial Neural Network (ANN) is to simulate this network, allowing computers to learn and make decisions with minimal human interaction. In the context of seismic based exploration, the use of AI means considerably less manual effort and time intensive feature extraction and classification for the interpreter and the delivery of results which are meaningful and, in some instances, far more detailed than could be achieved using conventional methods within a given time frame. ATOG has utilised Geoteric's AI software as a tool to evaluate the complex fault networks present in the onshore BBT field, located in Tunisia. The use of AI technology has, delivered an alternative, yet highly detailed fault interpretation to that achieved through more traditional methods. The AI fault interpretations can be directly integrated into the standard seismic evaluation workflow, aiding prospect definition through improved trap definition and understanding of structural controls on reservoir development/distribution. Taking this further the results can be incorporated into reservoir models and ultimately assist in well placement decisions.