

Bay Area Geophysical Society Seminar Series



Advances in seismic reservoir characterization: Joint elastic-litho-petro property estimation and the automation of the process

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March 25th, 2021 5 PM PST -- Zoom Talk

Abstract:

Traditionally the seismic reservoir characterization (SRC) workflow has been carried out by initially inverting seismic reflection amplitudes for elastic rock properties. Then, lithology and petrophysical parameters are derived from the elastic parameters using either empirical approaches or rock-physics-based methods. In recent years it has been demonstrated that elastic parameters and lithology can be jointly estimated relaxing the dependency on the low-frequency prior model derived from well-log measurements. We have implemented the litho-petroelastic (LPE) inversion using data assimilation algorithm. The Bayesian filtering approach is attractive as this method integrates data and model in a manner that tracks uncertainties and manages the data flow helping to control this ill-posed estimation problem.

The need to reduce costs associated with seismic products and increase the value proposition of seismic technology is greater than ever. Automation of seismic imaging and interpretation workflows is a key factor in reaching this goal. Aligned with this objective, we have developed a method to automate pre-stack

and post-stack AVA inversion such that given a well-log data and migrated seismic partial angle stack gathers a single push of a button will generate automatic, well-tie, wavelet extraction, and estimation of elastic parameters, lithology, and petrophysical properties in the general zone of interest. This method can reduce the time cycle of SRC projects and make it available for new non-expert potential users of seismic data.

Presenter's Bio:



Edan Gofer is a research geophysicist and US Land Seismic Reservoir Characterization (SRC) team lead for Schlumberger Geosolutions. He received an M.Sc. degree in geophysics in 2012, and a PhD in geophysics in 2019, from the Tel Aviv University. Since joining Schlumberger in 2013, Edan's work has mainly focused on research and development of seismic amplitude analysis for reservoir characterization. He has also been involved in numerous commercial SRC projects in North America and across the globe.

Edan is an active contributor to the geophysical community, publishing and peer-reviewing technical papers, and volunteering with Society of Exploration Geophysicists (SEG) and the European Association of Geoscientists and Engineers (EAGE).

Zoom meeting information:

Zoom ID: 912 5546 5394

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