

FULL WAVEFORM INVERSION USING MACHINE LEARNING OPTIMIZATION TECHNIQUES

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ABSTRACT

Full Waveform Inversion is a technique that aims to obtain high-resolution earth model parameters using all the information available in seismic data and can provide valuable information about subsurface properties. It is a very computer demanding algorithm and is prone to local minima issues, when the starting model is not close to the desired solution. In this work, we applied some machine learning techniques like non-linear transfer functions, dataset shuffling, and Adaptive Momentum Estimation optimization to perform Full Waveform Inversion. Tests on a subset of Marmousi model shows that the studied techniques can provide very good model estimations even with poor starting models.