



## Similarity measurements of seismic and acoustic signals using Hidden Markov Models

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### ABSTRACT

This work presents a probabilistic characterization scheme for seismic and acoustic signals. This scheme assigns the stationary wavelet packet coefficients of the signal, to a representative left-to-right Hidden Markov Model (HMM). In particular, the coefficients of the signal are modeled via a set of Gaussian emission distributions and a matrix of transiting probabilities. The training of the HMM is performed using the Expectation-Maximization algorithm. Similarities measurements between signals then are calculated in terms of the Kullback-Leibler divergence (KLD) by comparing their corresponding HMMs. The proposed scheme is applied to problems of seismology and acoustical oceanography.