

## Feature Extraction of MFCC Based on Fisher-Ratio and Correlated Distance Criterion for Underwater Target Signal

**Authors :** Han Xue, Zhang Lanyue

**Abstract :** In order to seek more effective feature extraction technology, feature extraction method based on MFCC combined with vector hydrophone is exposed in the paper. The sound pressure signal and particle velocity signal of two kinds of ships are extracted by using MFCC and its evolution form, and the extracted features are fused by using fisher-ratio and correlated distance criterion. The features are then identified by BP neural network. The results showed that MFCC, First-Order Differential MFCC and Second-Order Differential MFCC features can be used as effective features for recognition of underwater targets, and the fusion feature can improve the recognition rate. Moreover, the results also showed that the recognition rate of the particle velocity signal is higher than that of the sound pressure signal, and it reflects the superiority of vector signal processing.

**Keywords :** vector information, MFCC, differential MFCC, fusion feature, BP neural network

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