WARPED DISCRETE COSINE TRANSFORM CEPSTRUM: A NEW FEATURE FOR SPEECH PROCESSING (MonPmOR6)

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Abstract :

In this paper, we propose a new feature for speech recognition and speaker identification application. The new feature is termed as warped−discrete cosine transform cepstrum (WDCTC). The feature is obtained by replacing the discrete cosine transform (DCT) by the warped discrete cosine transform (WDCT, [4]) in the discrete cosine tranform cepstrum (DCTC [2]). The WDCT is implemented as a cascade of the DCT and IIR all−pass filters. We incorporate a nonlinear frequency−scale in DCTC which closely follows the barkscale. This is accomplished by setting the all−pass filter parameter using an expression given by Smith and Abel [5] . Performance ofWDCTC is compared to mel−frequency cepstral coefficients (MFCC) in a speech recognition and speaker identification experiment. WDCTC outperforms MFCC in both noisy and noiseless conditions.

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