In this paper, we propose novel techniques for feature parameter extraction based on MFCC and feature recognition using dynamic time warping algorithm for application in speaker-independent isolated digits recognition. Using the proposed Weighted MFCC (WMFCC), we achieve low computational overhead for the feature recognition stage since we use only 13 weighted MFCC coefficients instead of the conventional 39 MFCC coefficients including the delta and double delta features. In order to capture the trends or patterns that a feature sequence presents during the alignment process, we compute the local and global features using Improved Features for DTW algorithm (IFDTW), rather than using the pure feature values or their estimated derivatives. The experiments based on TI-Digits corpus demonstrate the effectiveness of proposed techniques leading to higher recognition accuracy of 98.13%.

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Index Terms

Computer Science

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Keywords

Speech recognition  MFCC  Dynamic time warping