Abstract: A Hybrid C-Means Clustering Model for Audio Signals Classification

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Abstract

This paper presents an audio signal classification framework that unifies the objective functions of Fuzzy C-Means (FCM), Possibilistic C-Means (PCM) and Hard C-Means (HCM) to improve the consistency and computational efficiency of the conventional FCM-based audio classification. A linear combination of objective functions of FCM, PCM and HCM is used along with two trade-off parameters ranging [0:1] to control the contributions of the objectives of FCM, PCM and HCM to the hybrid objective function. Experimental results indicate that the proposed approach outperforms the conventional FCM-based audio classification approach by 46.99% in accuracy improvement and 40.78% reduction in computational complexity.

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