Clustering Algorithm Combined with Empirical Mode Decomposition for Classification of Remote Sensing Image [Full-Text]

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Clustering is an unsupervised classification method widely used for classification of remote sensing images. As the spatial resolution of remote sensing images getting higher and higher, the complex structure is the simple objects becomes obvious, which makes the classification algorithm based on pixels being losing their advantages. In this paper, four different clustering algorithms such as K-means, Moving K-means, Fuzzy K-means and Fuzzy Moving K-means are used for classification of remote sensing images. In all the traditional clustering algorithms, number of clusters and initial centroids are randomly selected and often specified by the user. In this paper, the estimation of number of clusters and initial centroids using Empirical Mode Decomposition algorithm (ECEMD) for the histogram of the input image will generate the number of clusters and initial centroids required for clustering. It overcomes the shortage of random initialization in traditional clustering and achieves high computational speed by reducing the number of iterations. The experimental results show that Fuzzy Moving K-means has classified the remote sensing image more accurately than other three algorithms.