

عنوان مقاله:

A New Hyperspectral Image Classification Approach Using Fractal Dimension of Spectral Response Curve

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خلاصه مقاله:

In classification of hyperspectral images, methods like PCA, LDA, and ICA have simple structure and relatively good results, but an important deficiency is that these methods are not sensitive to the order of primary features. For every pixel of a hyperspectral image we have a vector of measured quantities corresponding to reflection coefficients of consecutive wavelengths which is called as spectral reflectance curve (SRC). So the ordinance of measured data might have some information that could be useful in classification. SRCs due to the high degree of snuggle they have, could be considered as fractals. In this paper we suggest a new approach of fractal dimension feature extraction based on FD of adjacent overlapping intervals and using their principal components as feature vector elements. These new features applied as inputs of a statistical per pixel classifier of segmented image, produced by K-means clustering method, with Mahalanobis distance. A majority voting step ended classification process. We achieved meaningful improvement of correct classification rate comparing to classic PCA method.

کلمات کلیدی:

Classification, Feature Extraction, Fractal Dimension, Hyperspectral Image, Spectral reflectance curve

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