عنوان مقاله:

Performance evaluation of FFT_PCA Method based on dimensionality reduction algorithms in improving classification accuracy of OLI data

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خلاصه مقاله:

Fusions of panchromatic and multispectral images create new permission to gainspatial and spectral information together. This paper focused on hybrid image fusionmethod FFT-PCA, to fuse OLI bands to apply Dimensionality Reduction (DR)methods (PCA, ICA and MNF) on this fused image to evaluate the effect of thesemethods on final classification accuracy. A window of OLI images from ArdabilCounty was selected to this purpose and preprocessing method like atmospheric andradiometric correction was applied on this image. Then panchromatic (band8) andmultispectral bands of OLI were fused with FFT-PCA method. Three dimensionalityreduction algorithms were applied on this fused image and the training data forclassification were selected from DRs Output. A total of eight classes include bareland, rich range land, water bodies, settlement, snow, agricultural land, fallow andpoor range land were selected and classified with support vector machine algorithm.The results showed that classification based on dimensionality reduction algorithmswas quite good on OLI data classification. Overall accuracy and kappa coefficient ofclassification images showed that ICA, PCA and MNF methods 86.9%, 89%, 96.8%and 0.84, 0.91, 0.96 respectively. The MNF based image classification has higherclassification accuracy between two others. PCA and ICA have lower accuracy thanMNF respectively.

کلمات کلیدی:

Hybrid fusion, FFT-PCA, Dimensionality reduction algorithms, Support vector machine