APPLICATION OF QUANTIZATION METHODS FOR IRS-P5 IMAGE CLASSIFICATION

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In the beginning, space remote sensing did not have the technical capability to gather continuous spectra. Due to this defect besides covering large spatial areas with reasonable spatial resolution, another method in remotely sensed data was required. Under various scientific investigations, several spectral bands were selected to represent a continuous spectrum. Recent improvements in Technology allow the acquisition of continuous spectra when all of the light across the reflectance spectrum may be collected, processed, and stored. Regarding to sensor characteristics, the light is normally divided into bands. Remote sensing specialists group these bands into the more or less standard bands which are used in traditional applications. Some techniques can be applied to accurately fit remotely sensed data while creating a minimal set of data; however skepticism of compression methods that pre-process the data should be tailored as well. The required number of bytes to represent the spectral curve will be proportional to the information content of the scene. In this paper, land-use classification with a panchromatic IRS-P5 image using frequency-based contextual classifier (FBC) is evaluated. To obtain the spatial arrangement of image gray-level values for classification, we applied several data preprocessing and reduction methods which improve the classification efficiency of the FBC by converting the 10 bit image to 8 bit. The gray-level reduction schemes are linear compression, automatic normalized quantization, texture spectrum, and fourier piece-wise nonlinear compression. We compared the classification accuracies and found that the GLR resulted images are as accurate as the original image. However, there was a little difference in classification accuracy among FPC and other gray-level reduction methods. In other words, for classification and further feature extraction procedures with the highest accuracy and the least data loss, the FPC provided the acceptable results in visual and image processing domains.

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