

APPLICATION OF WAVELET BASED TEXTURE FEATURES FOR OBJECT EXTRACTION FROM HIGH RESOLUTION SATELLITE IMAGES

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Commission VI, WG VI/4

KEY WORDS: Texture Descriptors, Image Classification, Object Extraction, Wavelets.

ABSTRACT:

The increasing availability of remote sensing data and the growing demand on geo-information for various kinds of spatial management issues have augmented the development of novel methods to analyze and interpret collected data more effectively and efficiently. High resolution satellite data is widely used in various applications including Image segmentation, Pattern recognition, Computer vision etc. Some objects on satellite image appear similar even being different on ground. The distinction among those objects can be made based on their texture. In this paper, wavelet based texture descriptors have been used for the purpose of image classification. High resolution satellite image (Cartosat-1) of the study region was decomposed into wavelet sub-bands up to third level and three texture descriptors (mean, standard deviation and entropy) were extracted from the decomposed bands. The input satellite image is classified based on the extracted texture features using two types of classifiers viz. Gaussian maximum-likelihood and support vector machine. The classification results are assessed with the help of error matrix. Overall accuracy and Kappa index are also obtained. A considerable increase in the classification accuracy is achieved using support vector machine as compared to maximum likelihood method. The classified image can further be used for land cover assessment and urban development planning.