

Landcover Classification System Using Neural Network by Remotely Sensed Image Data

S. Ito(1), Y. Suga(1) and T. Konishi(2)

(1)Hiroshima Institute of Technology, (2)Nihon CADIC Ltd.

A method of land coverage classification from remote sensing images has been proposed. In particular, regions of images are classified into "Mountain Area", "Grassland Area", "Water Area", "Urban Area" and "Bare Area" which are main area of the land. The process of the proposed method is following. First, we obtain regions from a remote sensing image using the segmentation method which we have proposed, since we obtain reliable features for classifying the regions. The k-means method is one of the most famous segmentation methods. However, we have to decide the number of regions previously when we use the method, since the number of regions is different from the remote sensing images. The image segmentation method has been proposed. The process of the proposed segmentation method is following. We cluster the images by using histograms of hue, saturation and intensity. The method of the clustering is follows. We decide the boundaries between classes in a histogram, the boundaries are decided by the maximum of the between-class variance. We obtain the image segmentation results from the three clustering results by applying the AND operation considering the character of an achromatic color. Next, the regions are classified into the areas by using the features from the region and the hierarchical type neural network as a classifier. The features are averages of hue, saturation and intensity, and the fractal dimension in the region, since the color features are very important features to classify clearly, and the fractal dimension is also very important features as the texture feature. In order to show the effectiveness of the proposed method, we have simulated classification from the remote sensing images.