Abstract

Segmentation is one of the most important tasks in image processing, it seeks to determine whether an intensity value corresponds to a predefined class. Global thresholding is the simplest method for segmentation, it separates the image into two distinct classes corresponding to intensity values located below and above a threshold. However, global thresholding methods have a tendency to over-segment or under-segment areas with relatively inhomogeneous intensity. Multi-level thresholding takes into account spatial variations of intensity in an image, it is obtained by applying to each region of the image a different threshold. In this paper we present an unsupervised multi-level thresholding technique for segmenting cloud areas from weather satellites images. Our approach is to initially generate several binary images from a set of predefined threshold values, then extracting and mapping the contours of the cloudy areas included in the image sequence. The segmented image will comprise all regions whose contour coincides with the outline of a region in the original image.

References

Unsupervised Multi-level Thresholding Method for Weather Satellite Cloud Segmentation

- H. M. Yahia, J.-P. Berroir, G. Mazars, and Others, "Model-Based Segmentation"
of Cloud Structures In Satellite Image Sequences,” in IEEE International Workshop on
Model-Based 3D Image Analysis, pp. 77–85, 1998.
- E. V. Volkova and A. B. Uspenskii, “Detection of clouds and identification of
their parameters from the satellite data in the daytime,” Russian Meteorology and
- S. L. Lim and B. S. Daya Sagar, “Cloud field segmentation via multiscale
convexity analysis,” Journal of Geophysical Research: Atmospheres, vol. 113, no. D13,
2008.
image segmentation and cloud classification from multispectral MSG–SEVIRI imagery,”

Index Terms

Computer Science

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Keywords

Image segmentation cloud segmentation multi-level thresholding contrast enhancement