Study of Dynamic Monitoring of Mine's Environment Based on Object-Oriented Classification and Artificial Neural Network

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ABSTRACT:

Dynamic monitoring of mine's environment mainly depends on comparing the specific target of mine's environment in mining regions of different phases. Conventional methods of mine's target extraction generally use the supervised classification of the high-resolution remote sensing image combined with the interpretation by human being after supervised classification. This paper presents a new method to improve the efficiency and recognition rate of mine's target extraction which use a variety of data such as high-resolution remote sensing image, multi-spectral data, DEM and multi-semantic information (Geological maps, Basic geographic data, Mining development and survey information et.) as data source and use artificial neural network and object-oriented classification technology to extract the specific target. The method of this paper gives different weights to each layer in multivariate data, and then makes segmentation of the data use object-oriented classification technology. Quantitative data of multi-semantic information, spectral information and texture information of each object are computed and stored as properties of the object. Artificial neural network has been chosen to be the classifier. Use monitoring and field surveys results as credible training sample to train different network designed for different types of mine's target in different regions. At last, data of Fangshan, Beijing has been used as experimental data to verify the availability of the method this paper presents, the results indicate that the method to monitor the mine's environment is effective.