PROBALILISTIC NEURAL NETWORK BASED ON MULTINOMIAL MODEL AND EM ALGORITHM IN CLASSIFICATION, FUSION AND CHANGE DETECTION CONTEX OF OPTICAL AND SAR IMAGES

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ABSTRACT

This paper presents the results of our continuing study on multidate multisensor image classification. In our previous study, we have recommended a neuro-statistical scheme in the framework of multitemporal optical-sensor image classification. The scheme consists of probabilistic nerual network (PNN) classifier to compute the posterior probabilities, expectation maximization (EM) method to optimize prior joint probabilities, and compound probabilities to produce thematic image and change image. This paper reports the results of extending the scheme for multidate multisensor image classification.For each sensor image classifier, two schemes have been evaluated. The first scheme has used the co-occurrence matrix texture feature images or original tonal images as the input data and the Gaussian kernel for the PNN classifier. The second scheme has used the original tonal image as the input data and the multinomial co-occurrence matrix kernel for the PNN classifier. The results are also compared to the use of back propagation (BP) classifier. Based on this study we have proposed a scheme for multidate multisensor image classification.