Title	A method for classification of multisource data using classwise reliability
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Abstract :

Fusion of data from different sensors has been utilized in several computer vision applications. The motivation behind data fusion is to generate an interpretation of the scene not obtainable with data from a single sensor, or to reduce the uncertainty associated with the data from individual sensors. For the image classification task, the goal of multisource fusing is to reduce the classification error rate obtained by single-source classification, or to discriminate more classes not attained with a single data source.

This paper presents a new method for statistical classification of multisource data. Each data source is considered independently, and then the classification results(local decisions) are fused using linear combination. We weight the different classes according to their estimated "classwise" reliabilities.

This approach is related to the model of Benediktsson and Swain. They used dataset reliability to weight the different sources in the fusion. However, although an information source has a lower degree of dataset reliability, some classes can be discriminated more successfully than the others; it is obviously useful to take classwise reliabilities of each local decision into account in the final decision fusion stage. Thus, we substitute dataset reliability factors in Benediktsson's model with classwise reliabilities estimated from class-averaged classification accuracies.

The performance of the model is evaluated by fusing Landsat TM images and ERS images for land-use classification. We demonstrate the improvement in the classification error rate compared to the conventional multisource classifiers.