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AN ALTERNATIVE APPROACH TO TRAINING ANALYSIS

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No matter how sophisticated one's statistical classifier might be, the success of a spectral pattern recognition effort is fundamentally limited by the degree to which the user can relate existing spectral classes to useful information classes. Many digital classification endeavors are limited not by the sophistication of available classification algorithms but by the ability to adequately tailor training activities to a specific application.

This paper discusses a "non-typical" procedure for implementing and improving the training process. The approach involves the use of film recorder output as a training base. Image data within selected training regions are enlarged, contrast stretched, and recorded as 3-band color composites. These products have been found useful for maximizing the expression of the spectral characteristics of features of interest in the original image. This permits the user to visually evaluate "apparent spectral classes" in the data, prior to a supervised classification. The hard copy output offers several advantages over "state of the art" color CRT displays used for the same purpose: hard copy products may be duplicated for wide circulation, thereby involving more people in the ground truth and training procedures; they may be analyzed at length in an office or field situation, unlike on-line CRT's; and they may be directly compared to reference maps or photos through devices such as a Zoom Transfer Scope.

After training sites are located on the enlarged and enhanced film recorded images, training site boundary input to the computer is facilitated by the use of a coordinate digitizer. This permits highly irregular boundaries to be handled and encourages analysis of many sites. In addition, training efforts in resource-specific studies can be greatly improved by limiting training and classification to subclasses of the resource type of interest. This is made possible by visual interpretation of the resource type on the film recorded image, digitizer entry, and subsetting of the image data file. This integration of conventional image interpretation and computer-assisted techniques often results in increased classification accuracy and decreased cost, depending on the application at hand.

This short paper will discuss the above advantages more extensively, and cover details of the training procedure and its hardware elements as implemented at the University of Minnesota. The results of several sample applications of the approach will also be described.