

## DATA FUSION AND OBJECT RECOGNITION

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### ABSTRACT

Combining satellite imagery with geographic information and digital terrain models substantially improves the success of object recognition. Image analysis procedures which use the integration of data from multiple sources are: registering satellite images to digital maps; acquiring ground truth from digital map databases; using digital elevation data to perform terrain; corrections on imagery data over regions of high topographic variation; using digital aspect information as an added feature to a classifier. These methods are proving to be imperative in forest classification procedures for identifying forest species, clearcut areas, forest burns, and regions containing forest regeneration in the Kootenay Mountain region of British Columbia.

In this paper, we discuss an application-driven expert system which will combine multiple source data to operate GIS integration procedures. The expert system will identify objects which are specified by the user of the expert system, and recognize them within a given accuracy as specified by the user. During the course of an analysis session with the expert system, it will perform all of the above-mentioned procedures in the process of classifying LANDSAT or SPOT imagery for any application which the user may wish to perform.

We concentrate in this paper on an expert system analysis session of a forest region in South-East British Columbia using LANDSAT-5 TM imagery. Map data is provided by the British Columbia Ministry of Forests and Lands in the form of digitized forest inventory maps with associated attribute information.