

# **DEVELOPMENT OF A SUPERVISED SOFTWARE TOOL FOR AUTOMATED DETERMINATION OF OPTIMAL SEGMENTATION PARAMETERS FOR ECOGNITION**

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## **ABSTRACT:**

Since the successful launch of the very high resolution (VHR) Ikonos satellite in 1999, object-based classification has quickly become the mainstream technology for land cover classification of VHR remote sensing images, such as Ikonos, QuickBird, GeoEye-1, WorldView-2 and airborne digital imagery. In object-based classification, image segmentation is a crucial process which directly influences the efficiency of the classification process and quality of the classification result. To date, eCognition software developed by Definiens has proven to be the most effective technique for object-based classification among a variety of object-based classification techniques. However, trial and error is still a standard approach of eCognition to finding proper segmentation parameters for achieving a proper segmentation of objects of interest. In the segmentation, operator's knowledge of the image and experience of the segmentation process play an important role for the success of the segmentation. In addition, the segmentation process is time consuming. These drawbacks have significantly limited the potential of eCognition for a broad range of practical applications. To overcome the limitation of eCognition in image segmentation, a software tool has been developed in the CRC-AGIP Lab (Canada Research Chair Laboratory in Advanced Geomatics Image Processing), which can automatically determine optimal segmentation parameters for eCognition through a supervised training process and fuzzy logic analysis – the Automated, Fuzzy-based, Supervised (AFS) segmentation software tool. Using the AFS segmentation tool in combination with eCognition, the segmentation of an object of interest can be achieved within minutes, instead of hours by solely using eCognition. And, the segmentation result can be significantly improved. This paper will introduce the AFS segmentation technique, and present its segmentation results from different VHR satellite images. The paper will also present the segmentation results of the proposed supervised segmentation and those of eCognition to allow readers make their own judgement about the segmentation quality.

**TOPIC:** Land cover classification

**ALTERNATIVE TOPIC:** Multi-spectral and hyperspectral remote sensing