

## SHAPE DETECTION IN REMOTE SENSING THROUGH GRAPH ISOMORPHISM

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Experiments on shape detection in remote sensing have been carried out using graph homeomorphism as the match criteria. The first step involved is to extract a graph from a monochromatic image, being the first approach the extraction of linear features as graph edges and intersections and points of local maximum curvature as graph nodes.

This first step has been carried out through three consecutive algorithms: detection of edge strength and thresholding with the Vero-Massy algorithm, edge thinning and finally edge following with simultaneous graph description generation.

This provides a description of the considered image as a set of graphs. The description is completed with the computation of the angle between graph edges incident at a common node. A candidate graph is now generated and the same description is computed.

The graph matching procedure is carried out with a simplified version of a forward checking with backtracking algorithm from Haralick and Shapiro with the sum of differences between corresponding edges of prototype and candidate as a measure of graph similarity.

Finally a couple of experiments with Landsat images is shown.