Abstract

A segmentation method based on pixel classification by Isodata algorithm and evolution strategies is proposed in this paper. The Isodata algorithm is an unsupervised data classification algorithm. Its result depends strongly on two parameters: distance threshold for the union of clusters and threshold of typical deviation for the division of a cluster. A bad choice of these two parameters leads the algorithm to spiral out of control leaving the end only one class. To determine these parameters and improvements to this algorithm, evolution strategies are used. An evolutionary algorithm is adapted to estimate the two optimal thresholds to be used by the algorithm then Isodata. To note that the other parameters are chosen empirically. The application of this evolutionary method (Evolutionary Isodata: Elsodata) on synthetic and real images helps to validate this approach and show its interest in the problem of decision support in the quality control.

References


Index Terms

Computer Science

Pattern Recognition
Keywords
Classification  Segmentation by pixel classification  Isodata algorithm  evolutionary strategies