AN OPTIMAL EDGE DETECTOR FOR AUTOMATIC SHAPE EXTRACTION IN CBIR APPLICATIONS

Sarifuddin Madenda
Pusat Pengembangan Elektronika dan Multimedia
Universitas Gunadarma
sarif@staff.gunadarma.ac.id

Abstract

Detecting edges in digital images is a trickly operation in image processing since images may contain areas with different degrees of noise, blurring and sharpeness. This operation represents an important step of the whole process of similarity shape analysis and retrieval. There is a variety of edge detectors and each detector has different performances depending on image properties. Several edge detectors are very effective for sharp images but sensitive to noise while some detectors are well adapted to both sharp and noisy images (depending on the filter parameters) but are sensitive to blurring. This article presents two smoothing and detection filters which are well adapted to the detection of blurred or/and noisy edges. Their development is based on a model of blurred contours. These filters can be implemented in a third-order recursive form and offer advantages in the analysis of different edge types (sharp, noisy and blurred). Experimental analysis shows that the results obtained by these filters give a definitely better quality of the edge detection with respect to the existing filters. They also provide a better detection and good edge localization.

Keywords : edge detector, automatic shape extraction, CBIR application