A Cellular Automata based Optimal Edge Detection Technique using Twenty-Five Neighborhood Model

Abstract

Cellular Automata (CA) are common and most simple models of parallel computations. Edge detection is one of the crucial task in image processing, especially in processing biological and medical images. CA can be successfully applied in image processing. This paper presents a new method for edge detection of binary images based on two dimensional twenty five neighborhood cellular automata. The method considers only linear rules of CA for extraction of edges under null boundary condition. The performance of this approach is compared with some existing edge detection techniques. This comparison shows that the proposed method to be very promising for edge detection of binary images. All the algorithms and results used in this paper are prepared in MATLAB.

References


**Index Terms**

Computer Science  
Image Processing

**Keywords**

CA  TFNCA  Edge Detection  Neighborhood  Linear Rule  Null- Boundary.