Implementing Morphological Operators for Edge Detection on 3D Biomedical Images

Abstract

In this paper we describe the mathematical morphology in the form of high level image processing and mid level image processing. We study two approaches, for “color morphology” are vector approach and component-wise approach. In set theory approach, Mathematical morphology is developed by J.Serra and G. Matheron. Edge Detection is well known approach which aims at searching and detecting the points in a digital image at which the image
brightness changes stridently. Edges are significant local changes of strength in an image. 3D biomedical images edge detection is an essential for object recognition of the human organs. Object recognition is a vital processing step in biomedical image segmentation. Important appearance can be extracted from the edges an image (e.g., corners, line, curves, etc.). In this paper, basic mathematical morphological operators are introduced at first then a mathematical edge detection algorithm is proposed to detect edges of the lungs CT image with salt-and-pepper noise and the Gaussian noise.

References

- Edge detection, Trucco, Chapt 4 AND Jain et al., Chapter 5

Index Terms

Computer Science
Pattern Recognition
Keywords
3D Biomedical Images  Edge Detection  Morphological Operators  Structural Element