Active Contour Model For Medical Applications

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Chapter 38
Active Contour Model for Medical Applications

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ABSTRACT

Recent developments in medical imaging techniques have brought an entirely new research field. Medical images are frequently corrupted by inherent noise and artifacts that could make it difficult to extract accurate information, and hence compromising the quality of clinical examination. So accurate detection is one of the major problems for medical image segmentation. Snakes or Active contour method have gained wide attention in medical image segmentation for a long time. A Snake is an energy-minimizing spline that controlled by an external energy and influenced by image energy that pull it towards features such as lines and edges. One of the key difficulties with traditional active contour algorithms is a large capture range problem. The contribution of this paper is that to in-depth analysis of the existing different contour models and implementation of techniques with minor improvements that to solve the large capture range problem. The experiment results of this model attain high accuracy detection and outperform the classical snake model in terms of efficiency and robustness.

INTRODUCTION

Medical image processing application has swiftly increased in recent years. Physicians and scientists make use of medical imaging techniques to visualize anatomic structures or mappings of physiological functions non-invasively with increased accuracy and precision. These tools influence areas including diagnosis, radiotherapy, surgical planning, and tracking of disease progress. The advent of various methods has provided physicians with powerful, non-invasive ways for studying the internal anatomic structures and physiological processes of the human body. The advances in imaging techniques also bring the benefit of providing better diagnosis and treatment options to many clinical applications. To facilitate visualization, manipulation, and especially quantitative analysis of medical images, methods

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