ISSUES AND PROBLEMS IN BRAIN MAGNETIC RESONANCE IMAGING: AN OVERVIEW

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Abstrak

Ada banyak isu-isu dan persoalan-persoalan pada pencitraan resonansi magnetik (MRI) otak yang merupakan kawasan yang belum diselesaikan atau belum mencapai hasil memuaskan. Paper ini menyajikan suatu tinjauan berbagai isu dan masalah segmentasi, koreksi, optimasi, diskripsi dan aplikasi pencitraan resonansi magnetik otak. Tinjauan dimulai dengan menjelaskan properti segmentasi yang merupakan hal paling penting dan menantang pada manipulasi MRI otak. Kemudian dilanjutkan dengan tinjauan pada koreksi rekonstruksi citra lapisan luar MRI otak, klasifikasi citra (untuk mengklasifikasi citra otak disegmentasi), dan juga tinjauan penggunaan deskripsi citra yang merupakan isu prospektif hebat, yang mana para ahli saraf memerlukan informasi yang dihasilkan dari proses pencitraan otak, termasuk masalah-masalah potensial dari aplikasi yang diterapkan oleh setiap teknik. Pada setiap tinjauan, disajikan beberapa informasi dasar secara umum.

Kata kunci: *issues, problems, brain MRI.*

Abstract

There are many issues and problems in the brain magnetic resonance imaging (MRI) area that haven't solved or reached satisfying result yet. This paper presents an overview of the various issues and problems of the segmentation, correction, optimization, description and their application in MRI. The overview is started by describing the segmentation properties that are the most important and challenging in MRI brain manipulation. Then correction for reconstructing the brain MRI cortex, classification is utilized to classify the segmented brain image, and also review the uses of description is the great prospecting issue while some neurologist need the information resulted from brain imaging process including their potential problems from application applied by each technique. In each case, it is provided some general background information.

Keywords: *issues, problems, brain MRI.*

1. INTRODUCTION

The presence of MRI has aroused the brain MRI visualization through image processing. Implementation of MRI visualization seems to be the recent important problems and issues in medical computer vision especially for the brain. The quantitative MRI brain structures examinations is becoming popular in study and medical area. The most problematic studies are overcoming the lack of boundaries, poor contrast, noise, supervised method, less robust, less efficient and less reliable to make a full use of obtaining data. Thus, it is expected that image processing methods will help to solve those problems.

Generally, brain MRI channels particularly are T1-weighted, proton density (PD), and T2-weighted data. While T1 data shows detailed anatomical brain image and T2-weighted data shows a less detailed anatomical brain image but have a high signal to detect lesions.

Digital brain MRI templates are able to measure signal changes in the brain that are due to neural changing activity. Due to that, it makes it possible to refine model by analyzing intensities of patterns as well as regions. However, past studies have never absolutely satisfied practitioners especially neurologist. There are many related problems and issues in different