

MRI Brain Segmentation: Step towards Computer Aided Diagnostic

Manojkumar Kathane

Research scholar

Vilas Thakare

Faculty, P.G.dept of computer science and engg . technology,S.G.B.A.U.Amaravati(Mah)

Abstract :

Diagnostic imaging is an invaluable tool in medicine today. Magnetic resonance imaging (MRI), computed tomography (CT), digital mammography, and other imaging modalities provide an effective means for noninvasively mapping the anatomy of a subject. These technologies have greatly increased knowledge of normal and diseased anatomy for medical research and are a critical component in diagnosis and treatment planning. MRI system has been active area for researchers. Due to fast computing technology available, the performance of MRI system has been improving, especially, in time reduction, improvements in resolution, removal of artefacts and flexibility in operation. One of the most important problems in image processing and analysis is segmentation. There are many methods that exist to segment the brain. Of these, conventional methods that use pure image processing techniques are not preferred because they need human interaction for accurate and reliable segmentation. Unsupervised methods, on the other hand, do not require any human interference and can segment the brain with high precision. In this paper, we review the methodologies of MRI segmentation that can be used in various diagnostics such as fMRI (Functional MRI), CMRI (cardiac MRI) and MRA (Magnetic Resonance Angiography). We will also present the different techniques of computational intelligence to be efficiently used in MRI segmentation.

I. Introduction :

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II. Diagnostics using MRI :

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III. Segmentation Methods

All paragraphs must be indented. All paragraphs must be justified, i.e. both left-justified and right-justified.

IV. Computational Intelligence in MRI Segmentation

V. Conclusion :

Diagnostic imaging is an invaluable tool in medicine today. Magnetic resonance imaging (MRI), computed tomography (CT), digital mammography, and other imaging modalities provide an effective means for noninvasively mapping the anatomy of a subject. These technologies have greatly increased knowledge of normal and diseased anatomy for medical research and are a critical component in diagnosis and treatment planning. MRI system has been active area for researchers. Due to fast computing technology available, the performance of MRI system has been improving, especially, in time reduction, improvements in resolution, removal of artefacts and flexibility in operation. One of the most important problems in image processing and analysis is segmentation. There are many methods that exist to segment the brain. Of these, conventional methods that use pure image processing techniques are not preferred because they need human interaction for accurate and reliable segmentation. Unsupervised methods, on the other hand, do not require any human interference and can segment the brain with high precision. In this paper, we review the methodologies of MRI segmentation that can be used in various diagnostics such as fMRI (Functional MRI), CMRI (cardiac MRI) and MRA (Magnetic Resonance Angiography). We will also present the different techniques of computational intelligence to be efficiently used in MRI segmentation.

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