Abstract

Skull stripping is an important image processing step in many neuroimaging studies. In this paper, a comparison of three brain extraction algorithms is done, namely Brain Surface Extractor (BSE), skull stripping algorithm using Geodesic Active Contour (GAC), and skull stripping using active contours without edges. The comparison is done with respect to accuracy of the three algorithms. The results provided by the three algorithms are compared against the processed results available in the OASIS dataset. A comparison of the three algorithms shows that BSE provides the best results with respect to the percentage of non-brain matter contained in the final segmented output. The algorithm using GAC produces a conservative result containing some amount of non-brain matter that can be removed using morphological operator. The algorithm using active contours without edges produces segmentation results containing some amount of brain matter removed from the result. This is mainly due to the sensitivity of the active contour to intensity values in the sulci present in the brain magnetic resonance image.

References

Accuracy based Comparison of Three Brain Extraction Algorithms

2006.


49, 1988

Index Terms

Computer Science
Signal Processing

Keywords
Magnetic resonance imaging  skull stripping  active contours  geodesic active contours  level sets