

Documents

Latif, G., Awang Iskandar, D.N.F., Alghazo, J.

Multiclass Brain tumor classification using region growing based tumor segmentation and ensemble wavelet features
(2018) *ACM International Conference Proceeding Series*, pp. 67-72.

Abstract

In this research, an automated method is proposed for Brain tumor classification into four different types which is an important step in brain tumor diagnosis. Most of the recent research studies focus on binomial classification of brain MR image into tumorous and non-tumorous images that can be extracted using image segmentation. Further classification of the extracted tumor into various classes is an area that is yet to be explored. In our work, we propose an automated system to classify the segmented tumor into various classes. First, the wavelet features are extracted from all four MRI modalities (Flair, T1, T1c, T2) and an ensemble feature set is generated to perform the binomial classification using Random Forest trees. Next, tumor area is extracted from the classified tumorous images by using region growing image segmentation algorithm. In the final phase, wavelet features are extracted from the segmented parts and classification is performed for various tumor types (Necrosis, Edema, Enhancing and Non-Enhancing). The experiments are performed on 35 cases including 14 Low-Grade Glioma (LGG) and 21 High-Grade Glioma with total 21,700 MR images. An average accuracy of 94.33% for binomial MR image classification and 96.08% for multiclass tumor classification is achieved. © 2018 Association for Computing Machinery.

2-s2.0-85058652819

Document Type: Conference Paper

Publication Stage: Final

Source: Scopus