

MRI based Glioma segmentation using Deep Learning algorithms

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Abstract

Primary brain tumors can be malignant (cancerous) or benign (non-cancerous). Out of primary brain tumors, gliomas are the most common and, high grade gliomas carry a poor prognosis. In our paper, we present a technique to segment the glioma cells in Magnetic Resonance Imaging (MRI) using faster Region based Convolutional Neural Network (R-CNN) and edge detection techniques in image processing algorithms. This study identifies the region of interest that is glioma cells, with higher confidence level and localize the tumor on the MRI with the tumor mask. Further, analysis shows that with the proposed technique it is possible to achieve an average detection accuracy, sensitivity, Dice score and confidence level of 99.81%, 87.72%, 91.14% and 93.6% respectively.

Keywords: *Magnetic Resonance Imaging, Region based Convolutional Neural Network, Glioma segmentation, deep Learning*