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Paper Title:	Deep Learning for Segmentation of Brain Tumors
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Abstract

Background: Meningioma, Glioma, and Pituitary tumors are some of the three most common brain tumors that have great adverse effects on normal functionalities of the brain. These tumors are hard to detect and take a significant amount of time manually. To overcome this problem, deep learning techniques help in automating tumor detection quickly. This helps in early detection of brain tumors and patients can receive treatment before the tumor gets worse. (2) Methods: An automated segmentation model was created using UNet as a base model along variation of ResNet architecture. Magnetic resonance imaging (MRI) scans with T1-weighted contrast-enhanced images having 128×128 pixels in dimensions, are categorized into 3 classes- Meningioma (MEN), Glioma (GLI), and Pituitary tumor (PIT). At last, the predicted tumor by the proposed model was compared with the ground truth label of the corresponding tumor class. Dice score and IoU were used as performance metrics of the model. (3) Results: In this study, the best performing model was ResNeXt50_32×4dUNet among the 7 models used. The mean test dice score from this model was 0.835 whereas the mean validation dice score was 0.784. Similarly, the mean IoU of the test images was 73.0% and showed an acceptable performance in the segmentation of brain tumor.