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3D brain glioma segmentation in MRI through integrating multiple densely connected 2D convolutional neural networks

Key words: Glioma, MRI, Segmentation, Dense block, 2D CNNs

Research Summary

This paper mainly proposed a glioma MRI threedimensional segmentation model based on multiple densely connected 2D-CNN, It includes four steps



The flowchart of the proposed method

Innovation points

• FIAIR and T2 superimposed fusion was used as one of the preprocessing step to enhance the edema part of brain glioma.

4

2

1

Loss 3

• Improve the cross entropy loss, add a uniform distribution term to the cross entropy loss function, which effectively solve the network overfitting



Innovation points

A series of comprehensive tables were generated to summarize the effectiveness of the proposed method.

Figure 6 The effect of loss function on segmentation results.

 Table 3 | The effect of Pre-processing step on segmentation results

 Table 3
 The effect of fusion processing on segmentation results

Table 4Online evaluation results

 Table 5
 Robustness experimental verification results of segmentation model