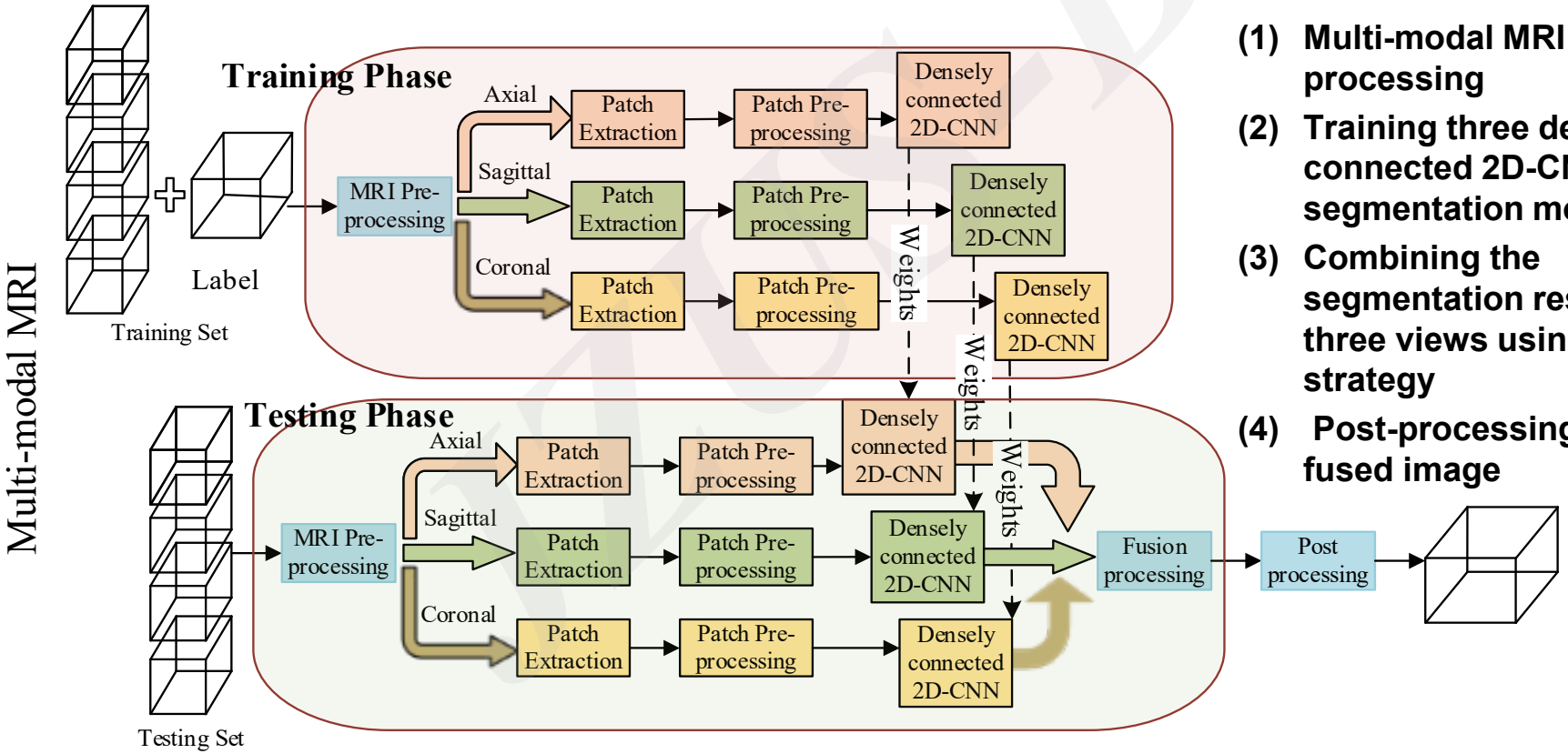
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3D brain glioma segmentation in MRI through integrating multiple densely connected 2D convolutional neural networks

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

Research Summary

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



(1) **Multi-modal MRI pre-processing**

(2) **Training three densely connected 2D-CNNs segmentation models;**

(3) **Combining the segmentation results of three views using fusion strategy**

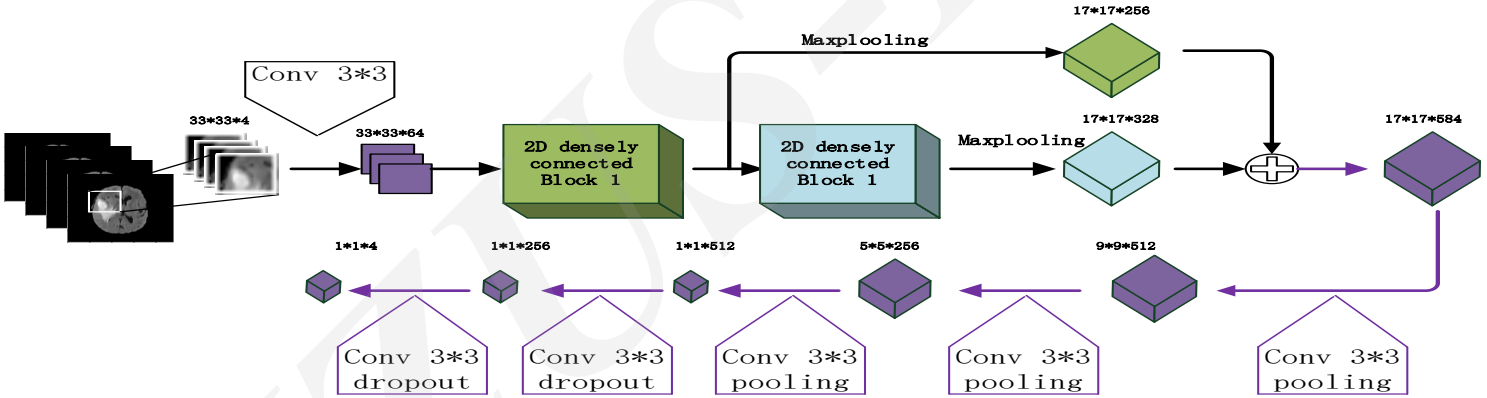
(4) **Post-processing the fused image**

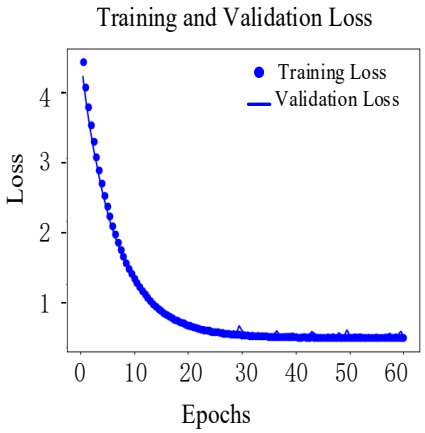
The flowchart of the proposed method

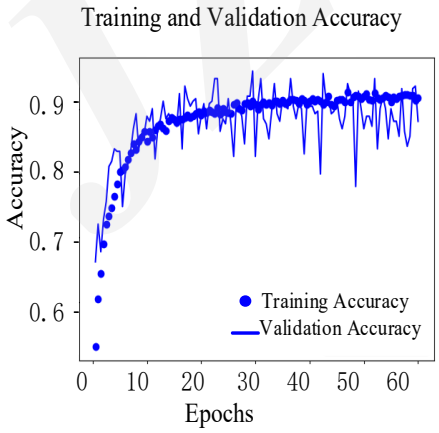
Innovation points

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

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







- Use multiple views to segment gliomas to improve the accuracy of glioma segmentation

Figure 4

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 4| Online evaluation results

Table 5| Robustness experimental verification results of segmentation model

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