

Supplementary Materials:

TW-Net: Transformer Weighted Network for Neonatal Brain MRI Segmentation

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I. APPENDIX

The appendix includes additional illustration and experiment results, including the intensity of different brain structures, p-values of competing methods, the output of the deep supervision module, sensitivity analysis of Transformer layers in terms of HD95, and ablation study for RF-layer and Transformer layers.

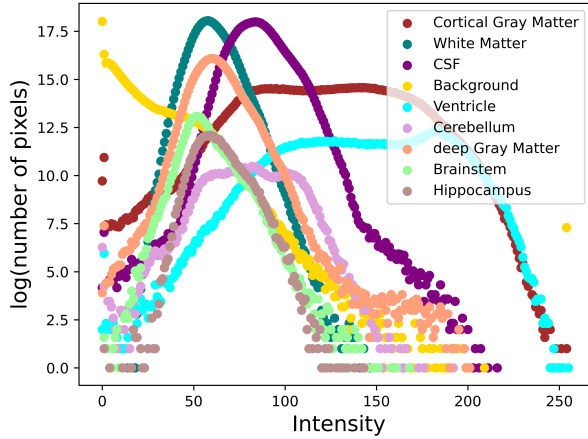


Fig. S1: The signal intensity highly overlaps between different neonatal brain structures.

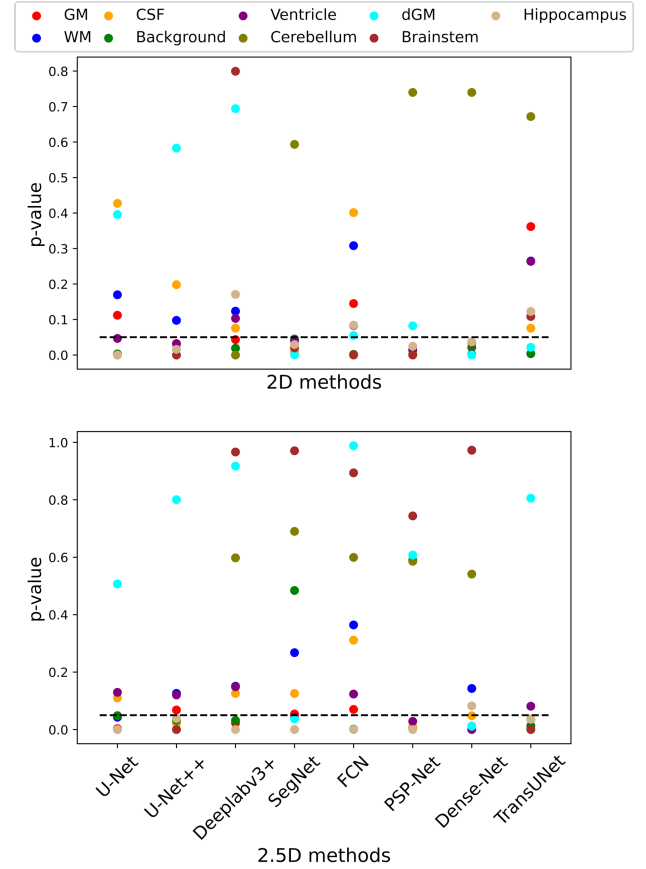


Fig. S2: The p-values show the differences in accuracy between the competing methods and our method. The upper graph shows the p-values compared to our method in the 2D experiment, and the lower graph shows the p-values compared to our method in the 2.5D experiment. The dotted line indicates 0.05.

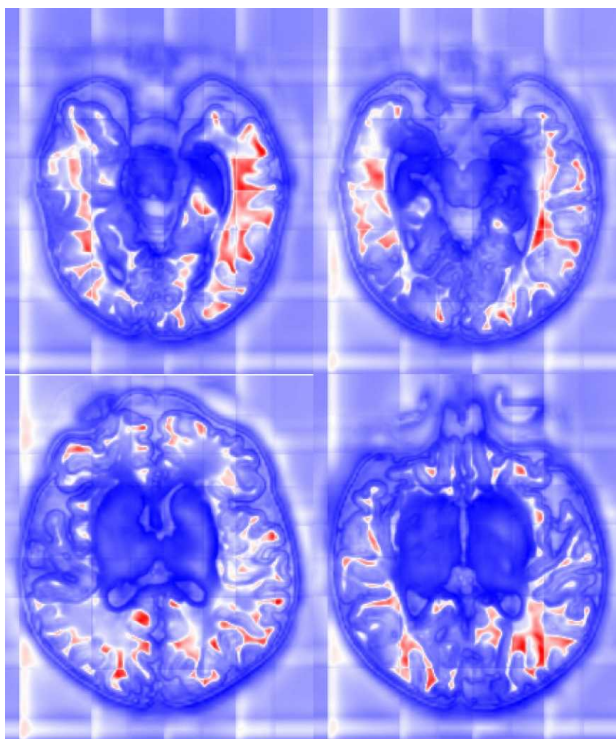


Fig. S3: The feature maps generated from the deep supervision module, which illustrates the capability of capturing the information of the boundary.

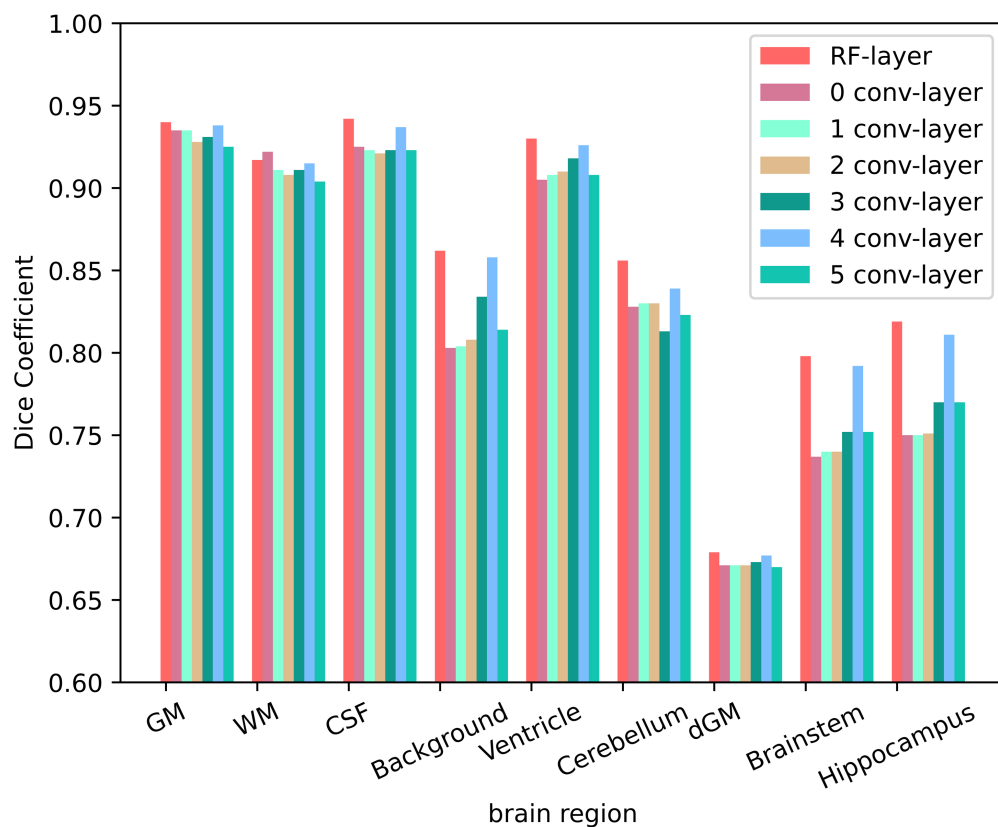


Fig. S5: Dice coefficients for comparing the effectiveness of the RF-layer and the convolutional layers for segmenting different brain tissues using our model.

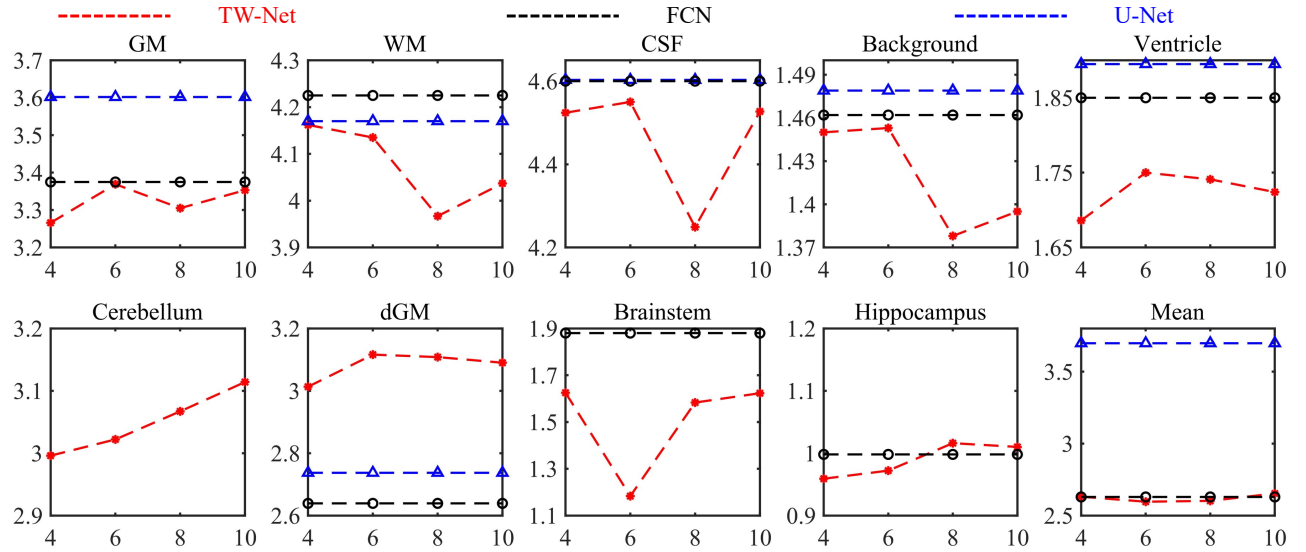


Fig. S4: Sensitivity analysis on Transformer layers using HD95 illustrates that the Transformer block enhances the network performance, which is independent of the number of Transformer layers. The x-axis represents the number of Transformer layers. We compare our methods with two baselines (FCN and U-Net). The labels not segmented are not shown in the figure (FCN fails to segment cerebellum, UNet fails to segment cerebellum, brainstem and hippocampus).

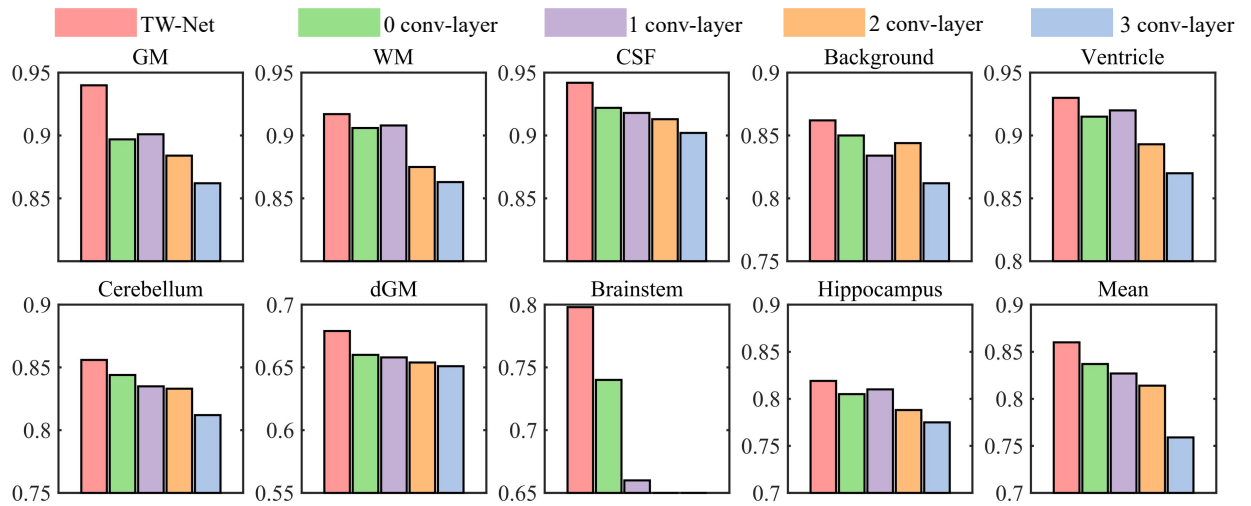


Fig. S6: Dice coefficients for comparing the effectiveness of the Transformer blocks and the convolutional layers for segmenting different brain tissues using our model.