Faster and more Accurate

Smartdsp3713

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Abstract. The brain tissue segmentation on MR images is valuable to quantifying the brain structures to evaluate the diagnosis, progression and treatment in different neurologic diseases. The medical image data is volumetric with three axis plane: axial, coronal and sagittal planes. Some existing deep models tackle this issue using 3D convolutional architecture, however, the differences in the spatial information in each axis plane has not been fully exploited. Also, the MRI data volume is usually has various modality with different imaging parameters, providing rich diagnostic information. In this work, we proposed a 3D weighted U-shape fully convolutional network (3D-SW-UNet) for brain tissue segmentation on multi-modality MR images. Which can fusing different features such as T1, T1_IR and T2_FLAIR slices. Our training and testing are done on a GPU of NVIDIA GTX 1080Ti.

Compared with the previous method. We deleted the previous weighting module, which greatly saved the calculation time. We changed the backbone network into Denseblock, which is conducive to the backward transmission of details. In addition, our new weighted module can better and faster select the places that should be paid attention to in segmentation. Finally, we fully integrated and utilized the information of auxiliary supervision module to obtain the final output result. This method achieves better results and takes better time, only about 2 minutes. We hope that this method can achieve better results.