

# Brain Tissue Segmentation Using CNN with Attention Mechanism

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We proposed a 2D encoder-decoder network with attention mechanism for brain tissue segmentation. In this network, the encoder outputs a low-resolution feature maps while the decoder recovers the low-resolution, high-level feature maps to the full input size. We develop an attention model to combine the the shallow, appearance features from the encoder with the deep, semantic features from decoder. We adopt a 2D network architecture where the inputs are 2D slices with three channels (T1, T1-IR and T2-FLAIR). The model is trained using the merged labels (gray matter, white matter and cerebrospinal fluid). The segmenatation is automic, costing 1 min per subject at the inference stage. This work is now in preparation and will be made public soon.