

U-net Based DenseNet with Deeply Supervised Nets for Prostate Segmentation

Bo-Siang Tsai

Method

We perform a 2D convolutional neural network for segmentation of the prostate in MRI. The model is based on U-net and replace all the convolution in native architecture by DenseBlock in DenseNet. We use dilated convolution in each DenseBlock. The bottleneck and transition layer are also applied. Besides, we add branch end output at each stage in decoder. We use dice loss for final output and all branch outputs.

Training Details

Before training phase, we normalize all the images with zero mean and unit standard deviation. All the images are resized in 512x512 pixels. To avoid overfitting, the data augmentation is applied on training data with random flip, rotate, scale, gamma and noise. Our model is trained with RMSprop optimization and batch size 4, and the initial learning rate is 0.001. The number of total epochs is 200.