

WMH Challenge: **Team Dice**  
**Jeroen Bertels, KU Leuven**

Method

We do five-fold cross-validation on the complete training set. During each fold, the model that performed best on the left-out validation set with respect to the Dice score is saved. At test time we average the prediction of these five models and threshold at 0.5.

The model is a CNN similar to No New-Net [1]. As input we used both the bias field corrected FLAIR image and the bias field corrected T1 image, aligned with the FLAIR image. These are used in the original format and concatenated in the feature dimension. Training and prediction is based on patches with an output size of 127x127x82.

During training we use ADAM to optimize the parameters of the network over 750 epochs. At each epoch, we randomly sample 12 subjects from which 4 image patches are extracted from inside the head region with data augmentation (e.g. Gaussian noise, flipping, rotations). We start with a learning rate of 0.001 and lower this by a factor of 10 after 250 and 500 epochs. As the loss we use the average of the cross-entropy loss and soft Dice loss [2], each applied to their corresponding output of the CNN. The Dice score on the validation set is monitored with the output that is used to compute the soft Dice loss.

[1] Isensee, F., Kickingereder, P., Wick, W., Bendszus, M., & Maier-Hein, K. H. (2018). No New-Net.

[2] Drozdal, M., Vorontsov, E., Chartrand, G., Kadoury, S., & Pal, C. (2016). Deep Learning and Data Labeling for Medical Applications. LNCS, 10008, 179–187.