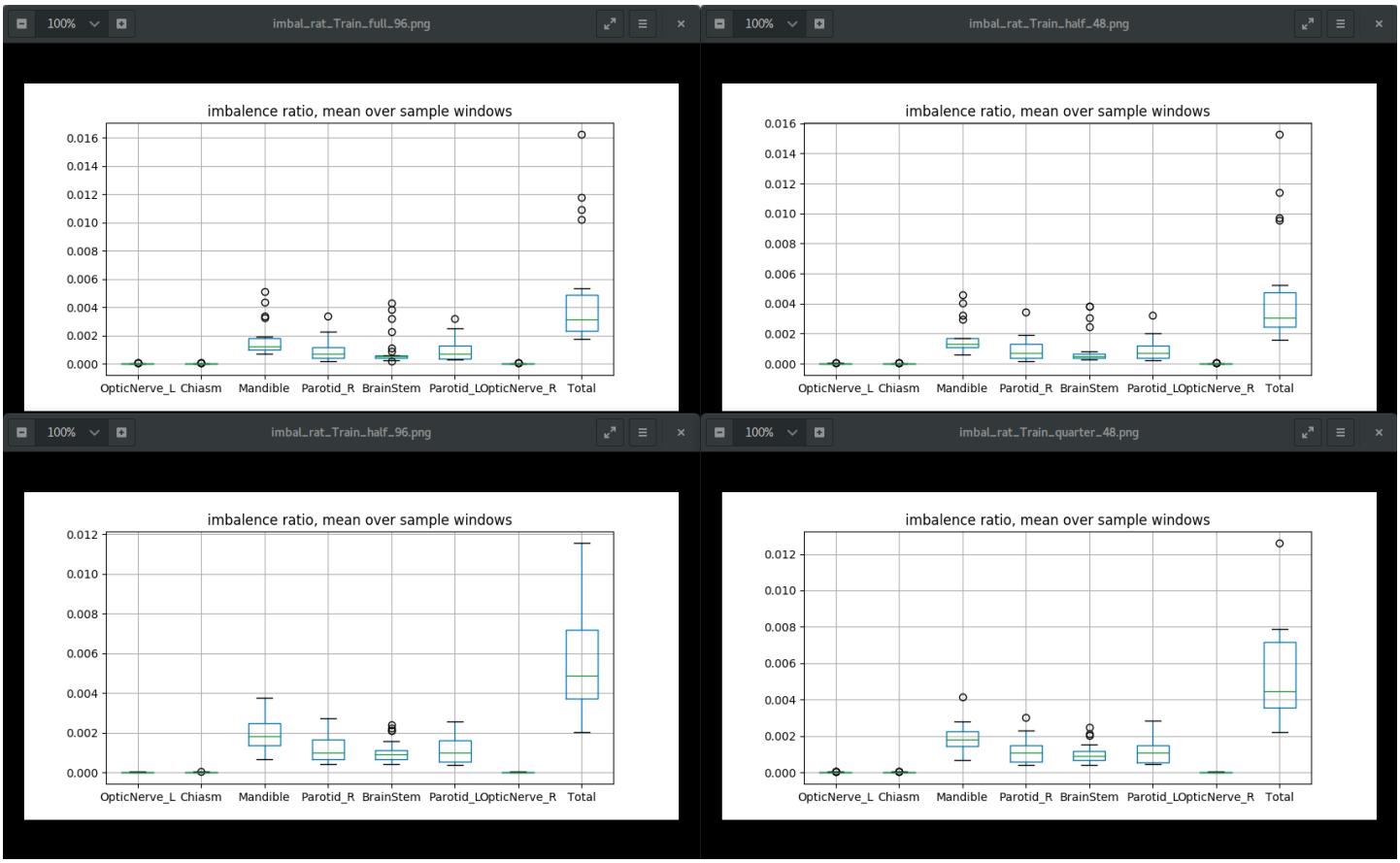
KW48 NiftyNet

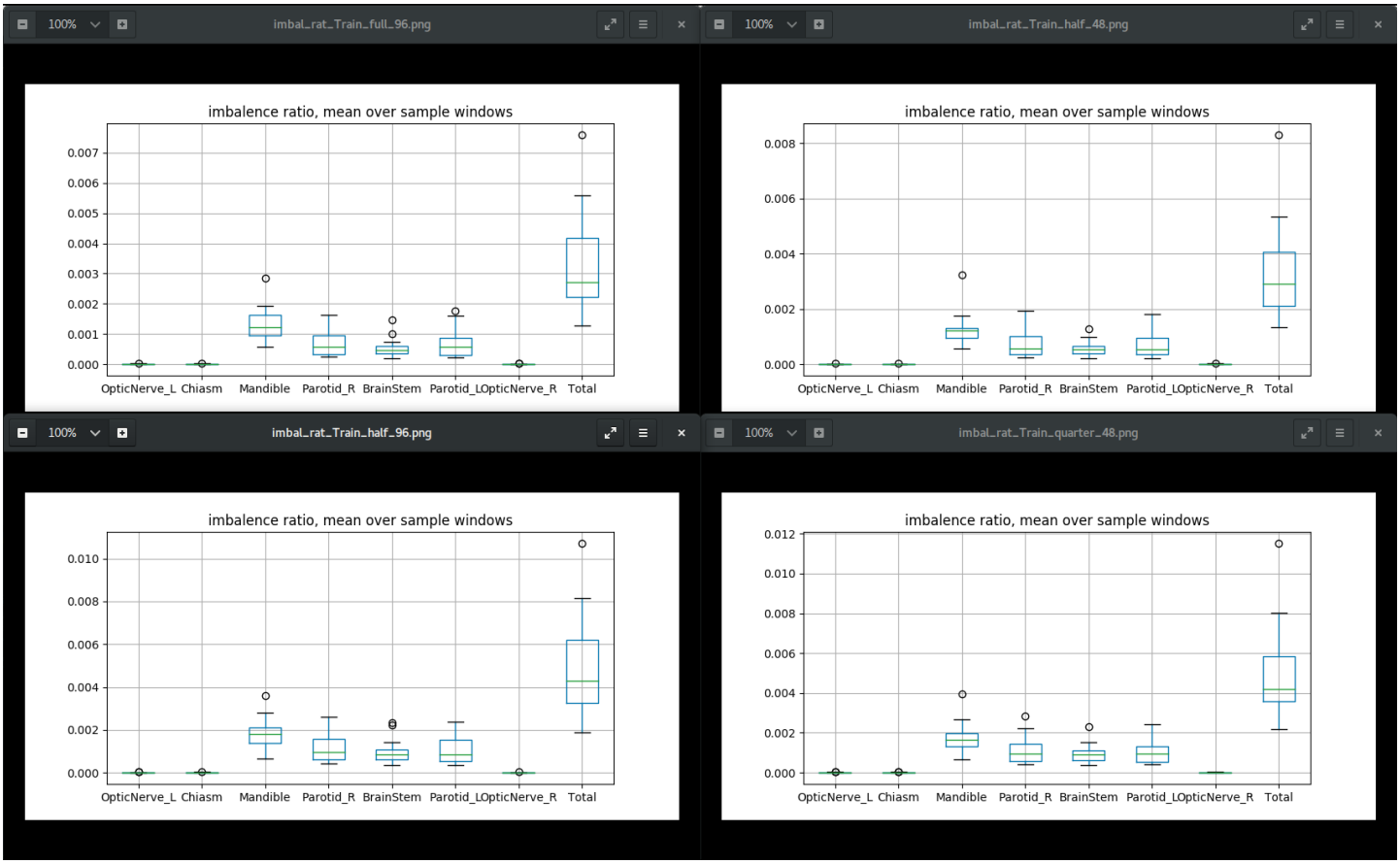
Imbalence Ratio evaluation. Done by reproducing the weighted sampling (collect_imbal_ratio.py script)

Figures shows the imbal ratio per organ and the summed ratio, averaged over all sample windows (1024 for the first iteration) and evaluated over all training files.

Weighted sampling using a otsu foreground selection as frequency map (1024 samples):



Uniform sampling over the whole image space (1024 samples):



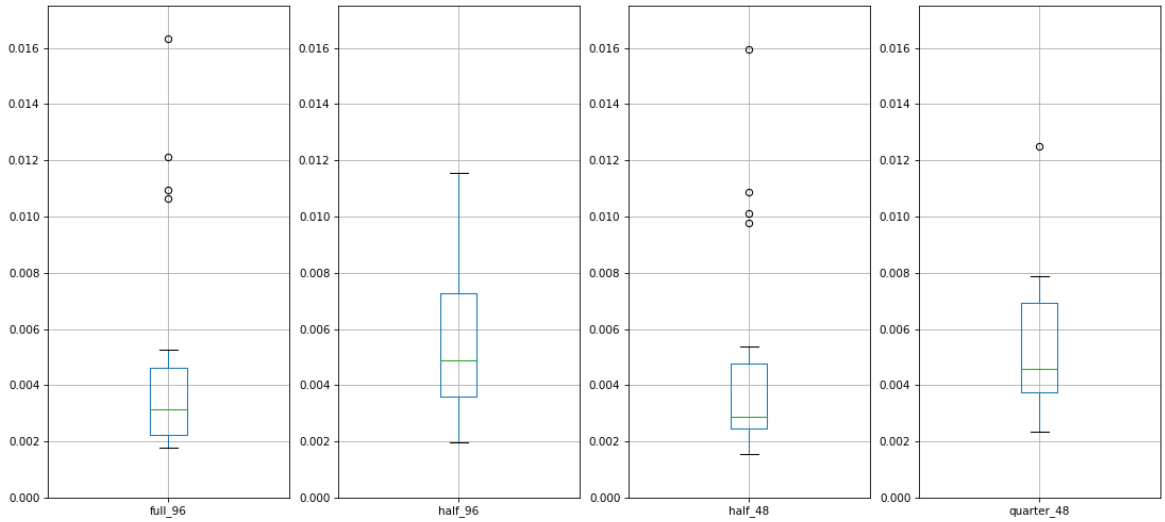
Interpretation

Using the weighted sampling the imbal ratio is slightly better but still very low. The best mean ratio is achived for the half sized ct image with a window size of 96x96x72. However the half sized ct with a windows size of 48x48x48 with a worse imbalence ratio achives the best segmentation results. Why?

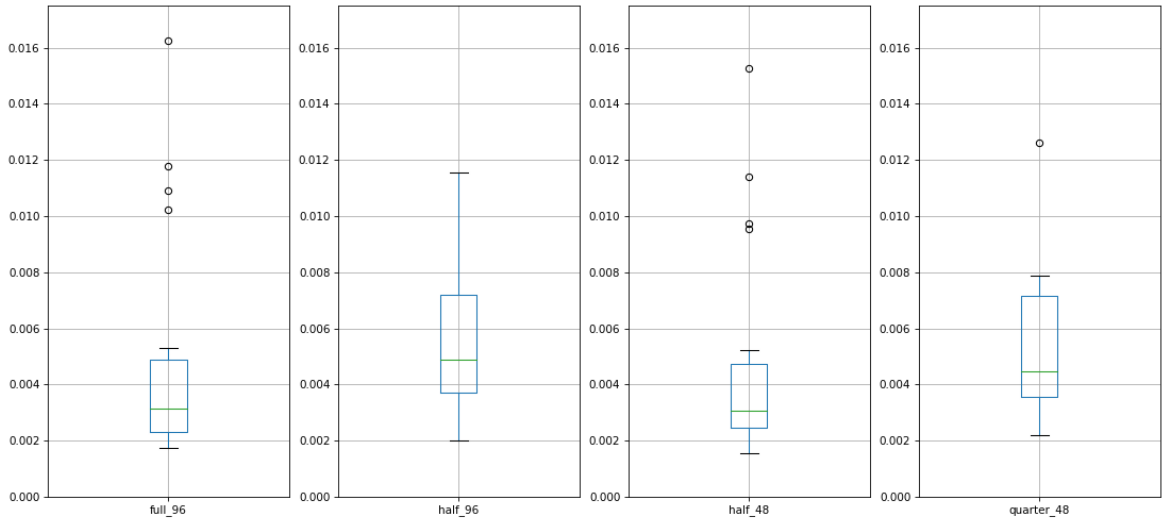
Results for different sampling sizes

Weighted sampling:

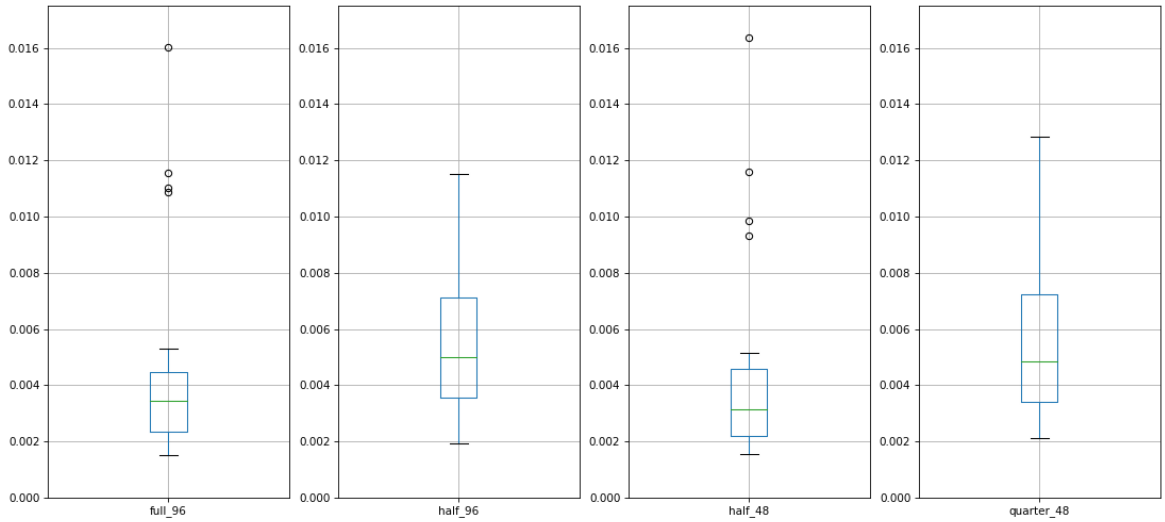
imbalence ratio, mean over 4024 sampled weighted windows



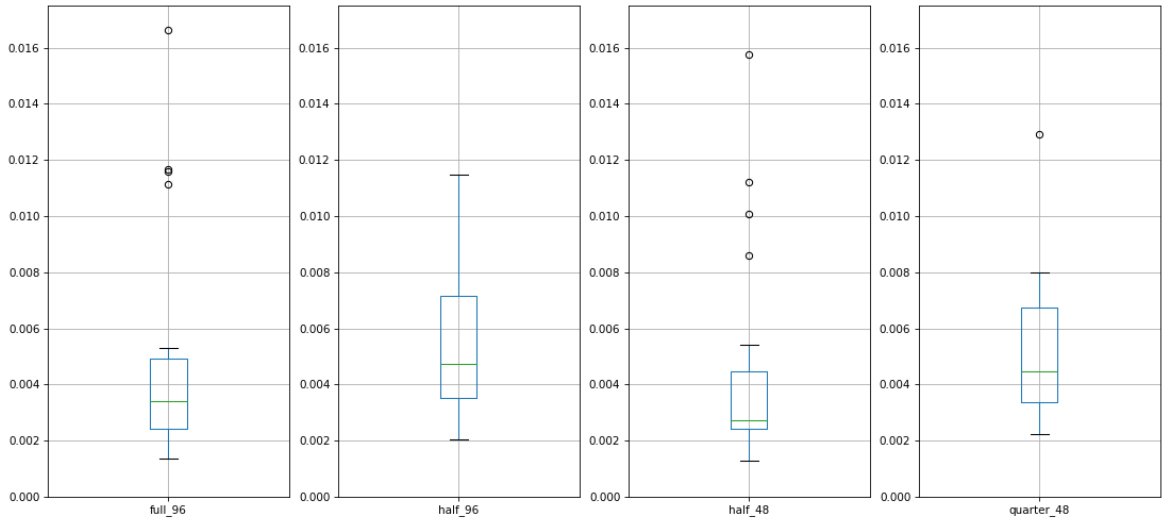
imbalence ratio, mean over 1024 sampled weighted windows

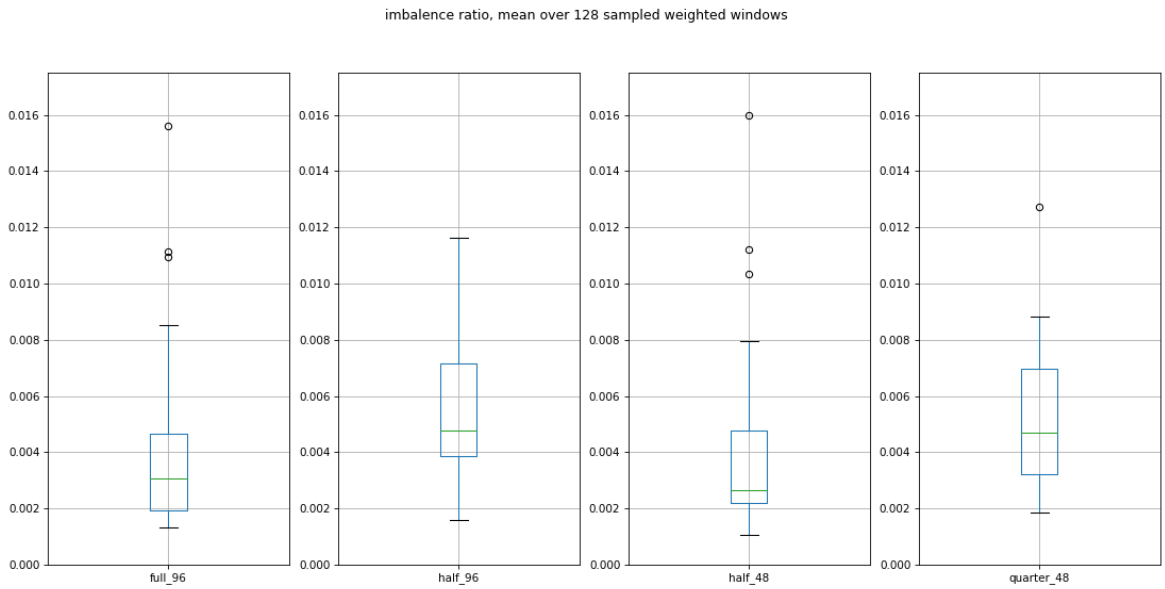


imbalence ratio, mean over 512 sampled weighted windows

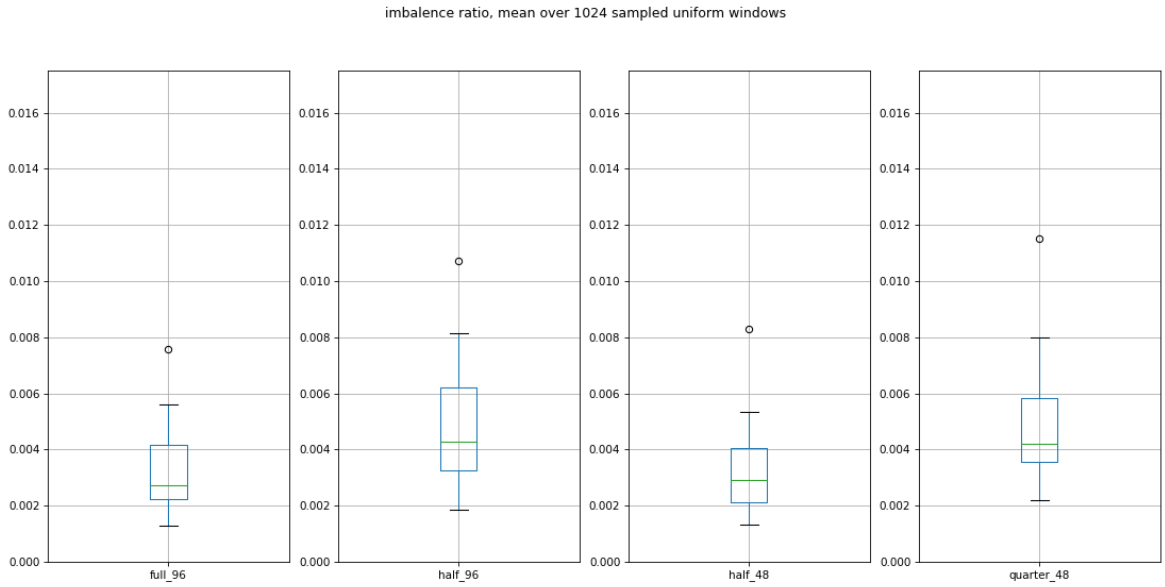


imbalence ratio, mean over 256 sampled weighted windows





Uniform sampling:



Interpretation:

Taking more samples does not significantly improve the imbal ratio. The weighted sampling approach is slightly better than the uniform sampling.

Todo:

- Have a closer look at the weighted sampling code! Maybe there is a connection to the not well working gdsc! Sorting and randomization problem
- Think about improving the imbal ratio!
- Generate graphs form recent test runs!

Hm comparsion uniform vs weighted maybe wrong, due to the foreground selection bug!! Has to be redone