Does image normalization improve segmentation performance?

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Normalisation

- Image normalisation is a process that changes the range of pixel intensity values
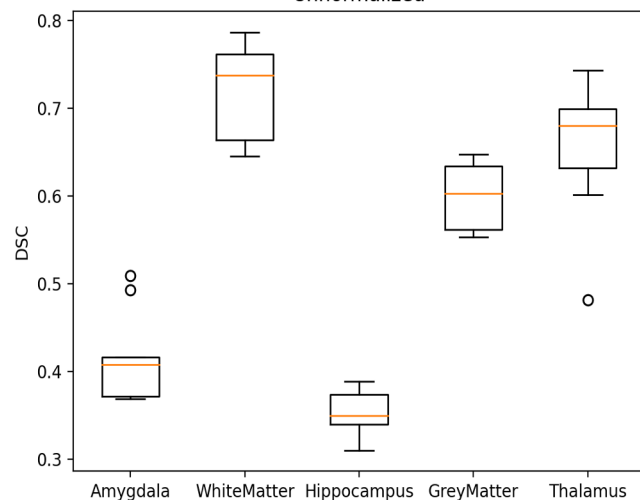- Pre-processing step

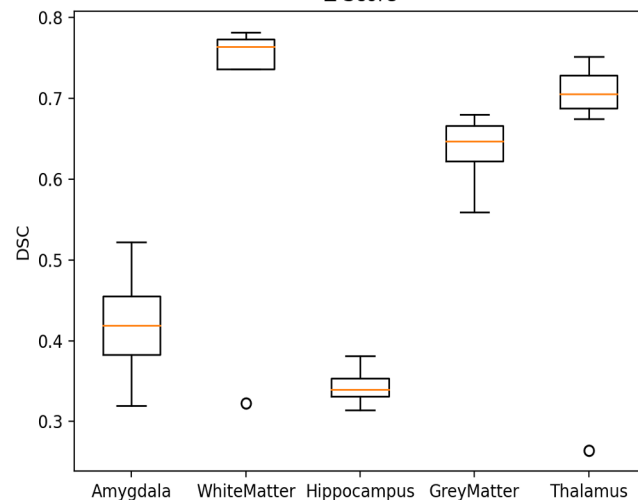**Hypothesis: Image normalisation improves segmentation performance**

Methods

- z-score
- min-max
- feature clipping
- log scaling
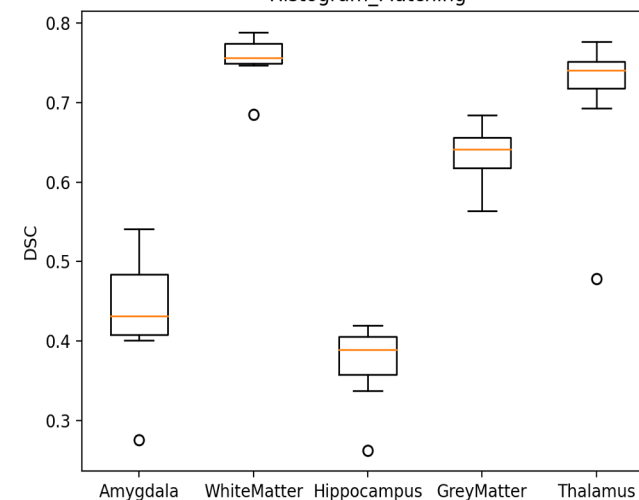- histogram matching

Preliminary results - Dice coefficient

Boxplot of Dice Similarity Coefficent for different labels of segmentation results on brain T1w images Unnormalized

Boxplot of Dice Similarity Coefficent for different labels of segmentation results on brain T1w images Z-Score

Boxplot of Dice Similarity Coefficent for different labels of segmentation results on brain T1w images Histogram_Matching

Preliminary results - Hausdorff distance

Boxplot of Dice Similarity Coeffient for different labels of segmentation results on brain T1w images Unnormalized

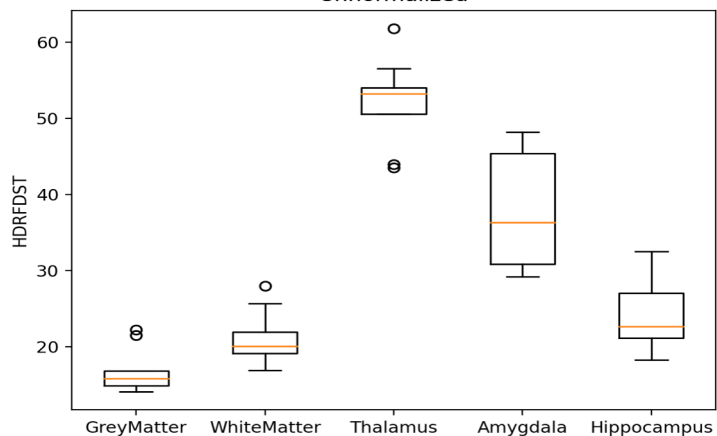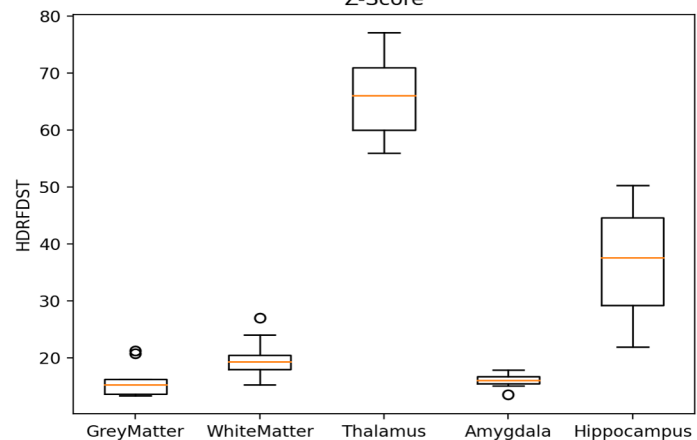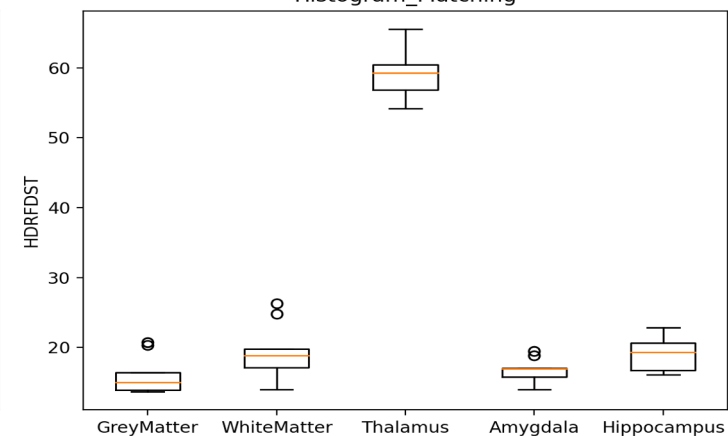Boxplot of Dice Similarity Coeffient for different labels of segmentation results on brain T1w images Z-Score

Boxplot of Dice Similarity Coeffient for different labels of segmentation results on brain T1w images Histogram_Matching

Next steps

- improve histogram matching - match to atlas
- fuzzy c-means (medians)
- statistical tests
- summarise results in the report
- prepare final presentation

Thank you!