and 4.12mm respectively, indicating better segmentation results and therefore better visualisation and lesion load quantification.

**Conclusion:** Promising MS lesion segmentation results have been obtained in terms of DSC and SD, improving previous approaches. We believe that there is still room for improvement in terms of TP and FP, for instance introducing new spatial constraints to improve those MS lesion segmentation results.

The authors have nothing to disclose.

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**A supervised approach to segment multiple sclerosis lesions using context-rich features and a boosting classifier**

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**Background:** Conventional magnetic resonance imaging (MRI) techniques are able to detect multiple sclerosis (MS) plaques with high sensitivity. This enables a quantitative assessment of inflammatory activity and lesion load. In quantitative analyses of focal lesions, automated approaches to segment lesions can become an objective tool for radiologists for clinical practice.

**Aim:** To propose an automatic MS lesion segmentation approach from brain MRI images. The main novelty here relies on the use of a boosting classifier and context-rich features, which allow the inclusion of spatial information extracted from T1-w, T2-w, PD-w and T2-w FLAIR images.

**Methods:** This MS lesion segmentation method is a supervised approach that uses a learning process to train a boosting classifier. A set of context-rich features, which encode spatial coherency, are used together with MRI intensities, tissue atlas probabilities and a lesion map coming from prior atlas-based tissue segmentation to train the classifier. During this training process, the boosting algorithm combines several simple classifiers that select the most discriminative features to build the final strong classifier. Afterwards, the new MRI volume is tested with the boosting classifier providing the desired lesion segmentation. A threshold, which is also determined during the training process, is finally applied to automatically obtain the final MS lesion mask.

**Results:** 15 real data sets (1.5T) were used to evaluate our approach. The experimental evaluation was performed using ground truth provided by radiologists and the following evaluation measures: true positives (TP), false positives (FP), surface distance between lesions (SD) and the Dice similarity coefficient (DSC) which indicates the accuracy of each detected lesion. The results were quantitatively compared to our implementations of recent state of the art approaches. The best results were obtained by our approach with 54% of TP and 72% of FP (referring to lesion detection results), while the DSC and SD values were 0.48