Introduction

Medical application context
Design a Computer Aided Diagnostic (CAD) system for lesion screening in brain MR images

 Assist clinicians in fast lesion detection in routine exams

Specifics
- No annotated pathological data \(\Rightarrow\) voxel-level outlier detection problem
- Relatively small data set (around 100 training subjects)

Objective
Design an automatic feature extraction method to be used in outlier detection problem at voxel level

CAD pipeline description

Results

Table 1: Test results for 9 patients with confirmed lesions reporting true positive/false positive clusters. Our rSNN features are compared to the handcrafted features in [3] and those obtained with stacked denoising autoencoder (sDA).

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Conclusion and future work

- Automatic feature extraction allows detecting voxel-level outliers in brain MR images and yields at least equivalent epilepsy lesion detection rate as epilepsy-specific handcrafted features.
- Slightly more false positive detections compared to the handcrafted features.
- Future work includes integrating other imaging modalities such as MR FLAIR images.