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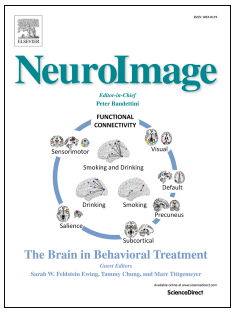

Neuroimage special issue on brain segmentation and parcellation - Editorial

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Neuroimage special issue on brain segmentation and parcellation - editorial

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0. Introduction

The 38 papers of this Neuroimage special issue on brain parcellation and segmentation provide a snapshot of a vibrant area of neuroimaging research. Parcellation, segmentation, clustering, community detection, etc., are different names for techniques aimed at dividing a collection of examples into subsets with similar statistical properties. Although clustering methods are used to solve seemingly disparate problems in neuroimaging, they all share the common goal of providing a broad understanding of the data, while abstracting away less relevant finer-grained information. So when the time came to write this editorial, we could not resist using a cluster analysis to organize these 38 papers into data-driven categories. We used a bag-of-words approach implemented in scikitlearn (Pedregosa et al. 2011) to measure the pairwise similarity between the abstracts of the papers. Using hierarchical clustering, we subdivided the papers into 7 categories (Figure 1a) and identified the 20 most relevant words for each category (Figure 1b)[1]. We used these categories in the following sections to provide a brief synopsis of the special issue's content.

----- Figure 1 about here -----

Figure legends

Figure 1. Panel a shows the correlation matrix between features extracted from the abstracts of the 38 papers included in this special issue. The papers were re-ordered to highlight categories of papers: each of the seven black squares on the diagonal highlights the similarity between papers belonging to the same category. Note that values within a square tend to be larger than values outside of squares, suggesting an appropriate cluster structure was identified. Panel b shows clouds of the most relevant words in the abstracts within each category, shaped as the category number.

1. Functional connectivity parcellation

With the exception of the description of a macaque brain template, this first (N=9) category of papers introduces new approaches to build or evaluate functional parcellations. (Arslan et al. 2017) compared tens of functional parcellation methods using a large array of metrics and

[1] The data used to implement the paper classification, as well as a notebook including all steps of the analysis are available on https://doi.org/10.6084/m9.figshare.5497468. The notebook can be executed on jupyter hub through this link https://mybinder.org/v2/gh/SIMEXP/si_parcellation_segmentation/0.4?urlpath=si_parcellation_segmentation-0.4%2Feditorial_NIMG_brain_segmentation_parcellation.ipynb.