Methods of fMRI segmentation

ICA, PCA, (contextual) Clustering

Compute statistical parametric map and thresholding it

Image segmentation plays a vital role in a medical imaging applications. Many image segmentation methods have been proposed for the process of successive image analysis tasks in the last decades.

In general, MRI segmentation is not a trivial task, because acquired MR images are imperfect and are often corrupted by noise and other image artifacts. The diversity of image processing applications has led to development of various techniques for image segmentation. This is because there is no single method that can be suitable for all images, nor are all methods equally good for a particular type of image.

The segmentation methods, with application to brain MRI, may be grouped as follows:

1. manual segmentation
2. intensity-based methods (incuding thresholding, region growing, classification, clustering)
3. atlas-based methods
4. surface-based methods (including active contours and surfaces, and multiphase active contours)
5. hybrid segmentation methods

Discussion and conclusions (from the article)