

Tool for Normal Brain Database

Building and Applying Brain Databases

This user-friendly PMOD tool provides an easy way to analyze the uptake in brain images across a set of normal controls. In the case of limited variation the normal pattern in the stereotactic space can hereby be established.

Patient images can fully automatically be compared against the normal pattern. Result is a z-score map, expressing the deviation in each pixel by the variability observed in the set of normal controls.

Sophisticated rendering techniques (optional P3D) allow exploring the sites of substantial deviations with reference to the patient images.

Normal Data Base Creation

The process of constructing a normal data base consists of the following steps:

1. The acquisition of images from a set of normal controls with the same acquisition and image reconstruction protocols as the patients are studied with.
2. The stereotactic normalization of the control images, so that the anatomy of the normalized images is comparable within a certain accuracy.
3. The scaling of the pixel values in the normalized images relative to an internal reference to allow pooling of the data. Flexible choices are available to restrict the reference calculation spatially and to a certain range in the distribution of pixel values.
4. The analysis of the values across the control collective in each pixel of the stereotactic anatomy to establish the normal value and its deviation across the set of normal data.

Normal data bases can freely be shared between different installations of this PMOD tool thanks to the export/import facility.

Comparison against Data Base

During the analysis, the patient images are stereotactically normalized and scaled in the same way as the control images, and the resulting pixel values compared with the normal values. This fully automatic process results in a map showing the differences between the patient images and the normal pattern, expressed as z-score values. The z-score map can be investigated in a multitude of ways including fusion with the patient images and 3D rendering (separate option), and exported for external usage.

DISCLAIMER

- THE PMOD NORMAL BRAIN DATABASE (PBRAINDB) TOOL HAS NO APPROVAL FOR CLINICAL USE.
- THEREFORE, THE PBRAINDB TOOL MAY ONLY BE USED FOR RESEARCH OR INVESTIGATIONAL PURPOSES.

Z-Score Maps in 3D

