Subject: Re: correlation between images
Posted by Mike[2] on Mon, 06 Apr 2009 16:59:20 GMT
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On Apr 6, 11:13 am, Wox <s...@nomail.com> wrote:

> But what is "close enough"? I guess nobody knows.

There are robust methods for evaluating statistical parametric maps (SPMs). Very generally, all of these methods involve using a set of images to calculate, at each point in the images, the statistical parameter appropriate for the null hypothesis under question. Applying a Bonferroni correction is required to keep the error rate at an acceptable level. The result is a map of the statistical parameter (or p-value) that is thresholded at a significance level. In order to account for correlations within each image, the data are often smoothed.

There is a nice online bibliography at http://www.fil.ion.ucl.ac.uk/spm/doc/biblio/. A good starting point might be J Comp Assisted Tomography 19 (1995) 788, "Estimating Smoothness in Statistical Parametric Maps: Variability of p Values." Or just google for SPM.

If you have only two images, you will always have trouble calculating an SPM. You could try treating the data as repeated measures of the same object. Then you could calculate a single paired t-test for the entire data set. If the test is significant, the hypothesis that the mean difference is zero could be rejected. In the sort of tomographic imaging that I'm familiar with, this is dangerous because individual points in each image are correlated with other points as a consequence of the image reconstruction methods. Another simple statistic is a z-score map (difference between test image and mean of a standard data set)/(std dev of a standard data set). That is an easy way to see if an image is consistent with a calibration data set, but again will require the proper Bonferroni corrections to avoid high error rates.

Mike