Subject: Re: Image Analysis using Splines
Posted by James Kuyper on Thu, 23 Feb 2006 19:05:22 GMT
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Stefanie Stoschitzky wrote:
> Hello,
>
> I hope that you can help me.
> For my diploma thesis I'm trying to improve MR-images. I have small
> (allready corrected) Mosaics of the image which includes different
> tissues. I now want to improve the difference between these tissues
> using B-splines, but I don't know how.

Splines are an interpolation tool; if you are comparing two images at different resolutions, you can use splines to interpolate the low-resolution image to the same resolution as the high-resolution image. I don't see any other way that splines would be relevant to such a problem, but I could be mistaken.

The /SAMPLE option of REBIN() performs nearest-neighbor interpolation, which is eqivalent to spline interpolation using outer-product B-splines of order 0. The default bilinear interpolation performed by REBIN() is equivalent to using outer-product B-splines of order 1. If REBIN() the ratio of the image resolutions is an integer, and order 1 is sufficient, then all the work has already been done for you, and you can just concentrate on looking at the results.

Otherwise, you can do 2-D spline interpolation by performing 1-D spline interpolation in each direction. Run SPLINE() once for each column of your input array, giving you the columns for an intermediate array. Then run SPLINE() once for each row of the intermediate array, giving you the rows of the final output array.

It would be more robust to compare the images by rebinning the high resolution image to the same resolution as the low-resolution image. Conveniently, REBIN() can also be used for this purpose, at least if the ratio of the image sizes is an exact integer in both dimensions; but in this case it has nothing to do with splines..