Subject: Re: INTERPOLATION TECHNIQUES HELP
Posted by Robert.M.Candey on Tue, 12 Nov 1996 08:00:00 GMT
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In article <56acrg$vuk@news.esrin.esa.it>, Marcos Portabella Arnus - RS/EM
<marcos> wrote:

> Hi,
>
> I need some help about the idl interpolation functions. I have tried all of
> them and I could not get any satisfactory result. I supose this is due to my
> lack of knowledge about them and this is the reason I am writing to this
> newsgroup list. I am using IDL version 4.0.1 (vms alpha). My problem is the
> following:
>
> I have three data vectors. The first two are X and Y position coordinates
> (longitude and latitude) and the third one is the magnitude mesured at each
> point (in my case, wind measurements). These points have not any order
> (irregularly gridded points) . In order to make an interpolation of these
> points in a regurlar grid (with a x and y spacing of half degree, for example)
> I have tried all three idl functions that allow this type of
interpolation. The
> first one, the TRIGRID function, is very fast but the results are poor
> (moreover, at the grid border, where it oftenly needs to extrapolate, the
> results are incredibily wrong, even if I set the EXTRAPOLATE keyword). The
> second one, the KRIG2D function, gives much better results but the major
> problem is the execution time: the time increases exponentially with the
number
> of points. I do not know if changing the function parameters (A, CO, C1) may
> reduce the execution time, but as far as I have tested with the idl help
> examples I could no get any better result. The third and last one, the
> MIN_CURVE_SURF function, has the same time restriction as the KRIG2D function.
>
> I would like to know if there is any other interpolating function for
> irregularly gridded points that gives better time results; or, if using more
> addequatly the KRIG2D or MIN_CURVE_SURF functions I can get better time
> results as well.
>
> Thank you very much,
>
> Marcos Portabella

I found the IDL-internal triangulate and trigrid routines (based on Renka,
ACM Trans. Math Software, 10,4, Dec. 1984) to be slower than the Akima's
IDTANG and IDXCHG routines (ACM Trans. Math Software, 1978 Alg. 526 in
Fortran) that I have linked into IDL with linkimage (since about 1986). I
see that Renka has a considerable update on his routines, just published in
ACM Trans. Math Software, 22, 1, March 1996, p.1-17 (alg 751, 752) but I

have not updated my code. I can send what I have if there is interest, although it is VMS-oriented.

What I am now doing is not interpolating at all, but instead plotting the individual points, as points or circles (using IDL's plots command), as a spectrogram (spectrogram.pro), or on a map (auroral_image.pro). I will post the last two and hope people will find these useful. Please let me know of bugs and places for improvements.

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Subject: Re: INTERPOLATION TECHNIQUES HELP
Posted by Marcos Portabella Arn on Wed, 13 Nov 1996 08:00:00 GMT
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Hi Robert,

First of all, thank you very much for answering me.

I would like very much to try the IDTANG and IDXCMG routines. There is not any problem about environment as I work with VMS as well.

I know that you are not working anymore with interpolations, but if you know about any bilinear interpolation IDL's routine for irregularly gridded points that take into account only the neibourgh points (with the option to set the maximum distance between the interpolated points and the data points), please let me know. As far as I know, MIN_CURVE_SURF and KRIG2D functions try to get a polynomial function and this is the reason for their longer time execution.

Also, Thank you very much for sending your spectrogram and auroral routines. I have copied them and I will try to test them in the next days.

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