Subject: Re: Accurate/fast interpolation
Posted by Craig Markwardt on Wed, 05 Sep 2007 03:56:41 GMT
View Forum Message <> Reply to Message

Steve <f@k.e> writes:
> Does anybody have a suggestion of speedups that might help in the
> following scenario...
>
> In a series of images there is a very small shift between succesive
> frames due to orbital dynamics on a spacecraft.
>
> For each image I can translate all the pixel locations to and from a
> common reference frame. The shift beween adjacent frames is sub pixel
> [typical value about 0.2].
>
> What I am trying at the moment is to set one image as a common
> reference, covert all the others to sub pixel positions on that
> reference frame and then use triangulate and trigrid to interpolate
> image values onto this common reference frame. This seems to work but
> is painfully slow [trigrid is fine triangulate takes many seconds].
>
> I just wondered since my data is nearly on the right grid to start
> with if there were a quicker way to do this?

Why not use INTERPOLATE?

If it's true that the points are very nearly on the right grid
already, then nearest neighbor interpolation can do quite well.

Cubic interpolation with CUBIC= set to some number between -0.5 and
-1.0 should be quite good too. I have a nice paper by Parker Kenyon and
Troxel (1983; IEEE Transactions on Medical Imaging, Vol MI-2, No. 1 p.31)
which compares the various interpolation strategies, and the cubic
methods have better frequency response at various pixel offsets than
bilinear or nearest neighbor (which means less smoothing).

Good luck,
Craig

--
 --- --------------
Craig B. Markwardt, Ph.D.   EMAIL: craigmnet@REMOVEcow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
 --- --------------