Subject: Re: linear interpolation to form a deformation field
Posted by Helder Marchetto on Thu, 24 Apr 2014 14:26:57 GMT
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On Thursday, April 24, 2014 11:14:13 AM UTC+2, g.na...@gmail.com wrote:
> How shall I change the string array to a numeric?
>
>
>
> I have an image and I want to use cspline, or spline (any kind of interpolation) to form a deformation field.
>
>
>
> I get my data from the image: STRING = Array[384, 384]
>
>
>
> I create the following:
>
>
>
> Dx= [[1,2,1,1],[2,1,3,1],[5,8,1,2],[3,8,2,1]] - deformation field (x-coordinates)
>
>
>
> Dy= [[1,2,3,1],[2,5,4,1],[6,8,1,3],[5,7,2,9]] - deformation field (y-coordinates)
>
>
>
> I want to use interpolation to find the displacement in x and y direction respectively. I assume I will end up with two matrices one says the displacement in x direction and the other in the y direction.
>
>
>
> I had a look on syntax of cspline() and spline() functions: Result = SPLINE( X, Y, T [, Sigma] [, /DOUBLE] ). It says that X and T must be monotonically increasing. I made the assumption that X is mine Dx (it might be wrong) and in my case Dx is not monotonically increasing so I don't know how to use these functions based on my data.

To convert a string to numeric you can use float(array), or double(array) for double precision.

As far as I understand it, the spline will help you with 1d data, not 2d. It will work, but give you the wrong answers.
x = findgen(5,5)
y = (x-3)^2

```
tvscl, rebin(y,50,50), 0
t = FINDGEN(5,5)+0.5
tvscl, rebin(spline(x,y,t),50,50), 1
```

as you can see, the two squares don't really have anything to do with one another.

So, you need something else, and I think that what you need is interpolate() (http://www.exelisvis.com/docs/INTERPOLATE.html):

```
x = findgen(5,5)
y = (x-3)^2
tvscl, rebin(y,50,50), 0
dx = FINDGEN(5)+0.5
dy = FINDGEN(5)+0.5
tvscl, rebin(interpolate(y,dx,dy,/grid),50,50), 1
```

Check out the keywords for interpolate. Cubic=-0.5 is almost always a good one.

Cheers

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