Subject: Re: random slice through a volume of catscan data
Posted by Sergey Koposov on Fri, 02 May 2003 18:36:19 GMT
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Jeff ,
the keyword ANISOTROPY allow to get the slice for GRID with different
steps for X,Y & Z axes , but I talked about method ,which allow to get
the slice for the more general situation - the situation with completely
scattered points.

Cheers,
Sergey

Jeff Nettles wrote:
> Sergey,
>
> Thanks so much for the reply. I did indeed learn about the EXTRACT_SLICE
> function and am going through it now.
> I think that you can actually use the ANISOTROPY keyword and use data that
> isn't uniformly spaced (mine isn't). But if not, your strategy makes sense
> to me.
>
> So again, thanks so much!
> Jeff
>
> "Sergey Koposov" <astro@mccme.ru> wrote in message
> news:b8rp8hkje1@news.rol.ru...
>
>> Hello, Jeff,
>> I think , if your data volume is presented as 3-dimensinal array (i.e.
>> your data is uniformly spaced), you can use the EXTRACT_SLICE function.
>>
>> Otherwise , (if your data is presented , for example, as 1-dimensional
>> array with x,y & z coordinates) you can
>> 1) define the function distance(x,y,z) , which will compute the distance
>> from the point to the plane
>> function distance,x,y,z
>> common plane ,A,B,C,D ; on the assumption that A*x+B*y+C*z+D=0 return
>> ,(A*x+B*y+C*z+D)/sqrt(A^2+B^2+C^2) ;define the plane
>> end
>> 2) Select the points for the slice by using WHERE
>> indices=WHERE(dist(X,Y,Z) lt 1) ;where X,Y,Z are 1-d arrays of x,y,z
>> coordinates
>> 3) Image the necessary characteristics for X[indices],Y[indices],Z[..]
>> with some interpolation (if you need of image , not of plot of points)
>> (for example the function GRID_TPS,and others (other functions are in
>> the IDL Online Help , "gridding and interpolation"))
>>

>> You can also make the interpolation for slicing in the beginning by
>> means the GRID3 function (see also IDL Online Help , gridding and
>> interpolation) . And after that , you will can directly perform the
>> imaging.
>>
>> I hope my considerations will be useful. But I don't insist that my
>> methods are optimal :)
>> Cheers,
>> Sergey
>>
>> Jeff Nettles wrote:
>>
>>> Hi All,
>>>
>>> I have some CT data that I would be able to take randomly-oriented
>
> slices
>
>>> through. (BTW, these are scans of meteorites, not people, in case
>
> you're
>
>>> thinking that it doesn't make any sense why i'd want to do this.) My
>>> approach so far has been to randomly select 3 sets of x,y, & z
>
> coordinates
>
>>> so that i have three points that define a plane. Now I want to extract a
>
> 2D
>
>>> image that represents that plane from the 3D CT data volume. My
>
> priority
>
>>> here is to preserve the shapes of the objects in the random slice. I
>
> know
>
>>> i'm going to have to do some interpolating since the slice won't always
>
> go
>
>>> through entire pixels. What i'm hoping that i can get help with is:
>>>
>>> 1) Is there by any chance a program someone has written (or included
>
> with

>
>>> IDL) that can do this already? (I'm a relatively inexperienced IDL
>>> programmer)
>>>
>>> 2) If I'm going to have to code this myself, are there IDL functions
>
> that
>
>>> would make this easier? I've looked at the WHERE function, but haven't
>>> convinced myself that it will help. I know to try to avoid for loops as
>>> much as possible so I'm trying to do that.
>>>
>>> 3) Any suggestions about a general approach to the problem would be
>
> very
>
>>> helpful.
>>>
>>> Thanks for your time (and hopefully your help!),
>>> Jeff
>>>
>>>
>>
>
>