Subject: interpolate 3D matrix
Posted by g.nacarts on Mon, 02 Mar 2015 14:04:36 GMT
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Hi

I have two 3D arrays Ax and Ay with the following dimensions[100,4,4]=[time,x,y].

I wanted to interpolate my matrices Ax and Ay and make them to have dimensions of [100,8,8]. A part of my code is shown below:

```
size = 8
Ax_2D_INT = fltarr(100,size,size)
Ay_2D_INT = fltarr(100,size,size)

for i=0, 99 do begin
    Ax_2D = REFORM(Ax[i,*,*])  ;change 3D to 2D
    Ay_2D = REFORM(Ay[i,*,*])

   dimensions_I_need = size(Dindgen(size,size),/Dimensions)
   dimensions_I_have = size(Ax_2D,/Dimensions)

  X = cgScaleVector(Dindgen(dimensions_I_need[0]), 0, dimensions_I_have[0]-1)

  Y = cgScaleVector(Dindgen(dimensions_I_need[1]), 0, dimensions_I_have[1]-1)

  Ax_2D_INT = INTERPOLATE(Ax_2D,X, Y, /GRID)
  Ay_2D_INT = INTERPOLATE(Ay_2D,X, Y, /GRID)
endfor
```

I got the following error but I couldn't figure out why.
Attempt to subscript DIMENSIONS_I_HAVE with <INT (1)> is out of range.

Subject: Re: interpolate 3D matrix
Posted by Helder Marchetto on Mon, 02 Mar 2015 14:38:01 GMT
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On Monday, March 2, 2015 at 3:04:41 PM UTC+1, g.na...@gmail.com wrote:
> Hi
>
> I have two 3D arrays Ax and Ay with the following dimensions[100,4,4]=[time,x,y].
>
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>
> size = 8
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```
>  Ay_2D_INT = fltarr(100,size,size)
>
>  for i=0, 99 do begin
>      Ax_2D = REFORM(Ax[i,*,*])  ;change 3D to 2D
>      Ay_2D = REFORM(Ay[i,*,*])
>
>     dimensions_I_need = size(Dindgen(size,size),/Dimensions)
>     dimensions_I_have = size(Ax_2D,/Dimensions)
>
>    X = cgScaleVector(Dindgen(dimensions_I_need[0]), 0, dimensions_I_have[0]-1)
>
>    Y = cgScaleVector(Dindgen(dimensions_I_need[1]), 0, dimensions_I_have[1]-1)
>
>    Ax_2D_INT = INTERPOLATE(Ax_2D,X, Y, /GRID)
>    Ay_2D_INT = INTERPOLATE(Ay_2D,X, Y, /GRID)
>  endfor
>
>  I got the following error but I couldn't figure out why.
>  Attempt to subscript DIMENSIONS_I_HAVE with <INT       (       1)> is out of range.
```

I've tried you code and got no error. In your test, you don't provide Ax and Ay. I've build them up myself as
Ax = randomu(s,100,size,size)
Ay = randomu(s,100,size,size)
and the code runs without errors.
My guess, is that Ax and/or Ay contain bad data (!null) or something similar.
Check your two input arrays.

Next thing I would highly recommend, is to avoid using variable names for which you also have functions. Don't use size = 8. This is just a source of trouble.

By the way, the error you described, happens when for example:

```
IDL> DIMENSIONS_I_HAVE = size(findgen(5), /dimensions)
IDL> print, DIMENSIONS_I_HAVE[1]
% Attempt to subscript DIMENSIONS_I_HAVE with <INT       (       1)> is out of range.
```

I made on purpose DIMENSIONS_I_HAVE have only one dimension. Then you cannot subscript the second dimension. So some when, your array Ax_2D has only one dimension. Try maybe printing "i" in the loop just before

```
 Y = cgScaleVector(Dindgen(dimensions_I_need[1]), 0, dimensions_I_have[1]-1)
```

Then check the value of i that generated the error and have a look at that Ay[i,*,*].

Good luck,
Helder

Subject: Re: interpolate 3D matrix

Posted by g.nacarts on Mon, 02 Mar 2015 15:51:31 GMT
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You were right for some reason the AX_2D has only one dimension. This happens after the first iteration.

```
AX_2D       FLOAT     = Array[4, 4]
AX_2D       FLOAT     = Array[8]
```

I replace the size word with something else to avoid troubles.