Subject: using cgSurface to produce a scatter 3D plot with 4th dimension
Posted by on Wed, 07 Mar 2012 11:16:54 GMT
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Hi,

I have a datacube like this and two arrays with the values for the 3 axes
L1 DOUBLE = Array[100]
L2 DOUBLE = Array[100]
SINF DOUBLE = Array[100]
XI2MAP DOUBLE = Array[100, 100, 100]

I select a number of points using where() and now want to create a 3D plot of these points and use the color to represent their value. I managed to do this with cgsurf:

```
max_xi      = 800
select      = where(xi2map LT max_xi,count)
WhereToMulti, xi2map, select, Col, Row, Frame
xi2         = xi2map[col,row,frame]
symColors   = Fix(BytScl(xi2))

cgLoadCT, 3
cgSurf,
 dist(100),l1,l2,xrange=[min(l1),max(l1)],yrange=[min(l2),max
(l2)],zrange=[min(sinf),max(sinf)],xstyle=1,ystyle=1,$
 /NoErase, xtitle='lambda_1',ytitle='lambda_2',ztitle='stability',/
nodata,/window,/save

cgAxis,XAxis=1,/T3D,XStyle=1,/window
cgAxis,YAxis=1,/T3D,YStyle=1,/window
cgAxis,ZAxis=0,/T3D,max(l1),min(l2),/window
cgAxis,ZAxis=0,/T3D,max(l1),max(l2),/window

cgColorbar, Divisions=4, Minor=5, Format='(F0.2)',
Range=[min(xi2map[select]), max(xi2map[select])],title='Xi2',/add

cgControl, Execute=0
FOR i=0,count-1 DO BEGIN
cgplots,[l1[col[i]],l1[col[i]]],[l2[row[i]],l2[row[i]]],
[sinf[frame[i]],min(sinf)],color=cgcolor('light gray')$
        , /T3d,/add
ENDFOR

FOR i=0, count-1 DO BEGIN
```

```
cgplots,l1[col[i]],l2[row[i]],min(sinf),/
t3d,psym=3,symsize=1.0,color=cgColor('black'),/add
ENDFOR

FOR i=0, count-1 DO BEGIN
cgplots,l1[col[i]],l2[row[i]],sinf[frame[i]],/
 t3d,psym=symcat(16),symsize=2,color=cgColor(StrTrim(symcolor s[i],2)),/
add
ENDFOR
cgControl, Execute=1
```

that's pretty much how David Fanning explained it in his traditional grafics book (pages 185-197). Now I am trying to get this working with cgsurface so I can rotate and zoom mi xi2 map. Is this even possible with cgsurface since it only accepts the data in 2D?

Subject: Re: using cgSurface to produce a scatter 3D plot with 4th dimension
Posted by David Fanning on Fri, 09 Mar 2012 13:25:13 GMT

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Sebastian Schäfer writes:

> I did - but Scatter_Surface only accepts 3 dimensions (e.g. x,y and a
> value for each point: z). Unfortunately, I have 4 dimensions: 3
> coordinates (x,y,z) and one value for each of these points. What is
> missing is the option to use the color of the symbols plotted to
> visualize the 4th dimension (like I did with cgSurf) or am I
> overlooking something?

That simple program does "elevation shading" (i.e., in the Z direction) by default, just like in your example.

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: using cgSurface to produce a scatter 3D plot with 4th dimension
Posted by on Fri, 09 Mar 2012 14:22:14 GMT
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On 9 Mrz., 14:25, David Fanning <n...@idlcoyote.com> wrote:

> That simple program does "elevation shading" (i.e., in the
> Z direction) by default, just like in your example.

True, but I have 4 dimensions x,y,z,f(x,y,z) and Scatter_Surface only
accepts 3 so there is no way I can plot my data with that program. One
would need to extend Scatter_surface in order to do that (which I
can't), and as I said, that's two lines in gnuplot (4D, not 3D).

Subject: Re: using cgSurface to produce a scatter 3D plot with 4th dimension
Posted by David Fanning on Fri, 09 Mar 2012 14:37:36 GMT
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Sebastian Schäfer writes:

> True, but I have 4 dimensions x,y,z,f(x,y,z) and Scatter_Surface only
> accepts 3 so there is no way I can plot my data with that program. One
> would need to extend Scatter_surface in order to do that (which I
> can't), and as I said, that's two lines in gnuplot (4D, not 3D).

Well, really, this is a 30 second fix. But, I'm on my
way to Hawaii and can't be bothered today! Maybe I'll
work on this when I get back. Can't have gnuplot doing
things IDL doesn't. ;-)

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")
