Subject: Interpolation
Posted by tarequeaziz on Sat, 12 Apr 2008 03:05:44 GMT
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Hello All (IDL Gods),

I am back with yet another problem.
I know...I know...its friday night. I apologize for that. But I am really stuck here for a while.

The problem:

In a certain part of my code I need to do interpolation. The data that I am dealing with are from a XY grid. I need to convert them to polar coordinate. So, what I do is following:

a. I generate a radius vector r_vec and a theta array containing values from zero to 2 pi.
b. Now use the simple polar-to-rectangular coordinate transform i.e. x = r cos(theta) etc.
c. Using these values I have a xy grid generated through a known r-theta values.
d. Now think of superimposing the new xy grid(lets call it x'y') on to the old xy grid which contains the real data.
e. This is the part where I need interpolation. I do interpolations to get the x'y' values from the xy points.

So here's the question:

----- Is there any elegant way of doing this coordinate transformation ? (And in case you are thinking, "well you already have the xy data, so why not just convert to r-theta?", I have to say that the interpolation method actually gives me a way nicer dataset).

My 2nd trouble is, and this is probably the biggest and dumbest problem for me.

----- i was playing around with several interpolation routines from IDl. My boss's suggestion was to use 'bilinear'.
but I thought to give others' a shot too. Problem is, when I am done with interpolation, result is nothing like what I was expecting. A run down version of the code is shown below:

==========start of code==========

Nth= 10.

```
dth= 1/Nth
r_vec= findgen(Nth)/Nth
theta_vec = findgen(Nth)/Nth  * 2.*!Pi

for i=0L,Nth - 1 do begin

x[i]= r_vec[i]* cos(theta_vec)

endfor

for j=0L,Nth - 1 do begin

y[j]= r_vec[j]* sin(theta_vec)

endfor

;print,y


;plot,x,y
```

Now I create the 'main' dataset on which I am going to use
interpolation scheme.

```
rr = findgen(20.)/30.
tht = findgen(20.)/30.  *2*!Pi

m = fltarr(20,20)


for j=0,19 do begin
   for i=0,19 do begin

   m[i,j] = rr[i]*cos(tht[j]) + 5.*rr[i]*sin(tht[j])

   ;print,i
   endfor
endfor

m_p=bilinear(m,x,y)

End
```

==========End of Code==========

The problem is, as I mentioned above, when I plot m and the
interpolated m_p, they do not look like similar at all.

Any help will be greatly appreciated.

Thanks in advance.

~tareque
