
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 2π .
- 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.
tth = 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(tth[j]) + 5.*rr[i]*sin(tth[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
