Subject: Repeats and Triangulation
Posted by Ben Tupper on Mon, 26 Feb 2001 19:09:52 GMT
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Hello all,

Just when I thought I had a handle on making polyline descriptors (for the IDLgrPolyLine object) I bumped into something tricky and over my head.

The short routine below will triangulate a small set of points and then display the Delaunay triangulation graphically (a direct graphics plot and an xObjView display of an IDLgrPolyline.) The routine can be called with the keepReps keyword set which will introduce two extra points in the data set (each of which repeats an exsiting point.) Call the routine without the keyword to see how it is supposed to behave. Then try it with the keepReps keyword set... and it will fall apart. The value of REPEATS is printed each time it is called.

The REPEATS keyword to TRIANGULATION returns a 2,n element array of pairs indices of repeated values. If no values are repeated then REPEATS = [-1,-1]. My question is 'How do I pull out the repeated values efficiently?'

Thanks,

Ben

```
;--------START
PRO Test, keepReps = keepReps

 ;make x and y
if keyword_set(keepReps)  then begin
 x = [2,5,2,2,2,4,9]
 y = [1,3,5,5,5,5,8]
endif else begin
 x = [2,5,2,4,9]
 y = [1,3,5,5,8]
endelse
 ;make a z value
z = (x-y)^2

 ; triangulate
triangulate, x, y, tr, b, connectivity = conn, repeats = rep
```

```
 ;show the results as a bird's eye view
 ;as shown in online help
plot, x,y,psym = 6
 ; Show the triangles:
for i=0, n_elements(tr)/3-1 do begin
   t = [tr[*,i], tr[0,i]]
   plots, x[t], y[t] , linestyle = 2
endfor

 ;make the polygon descriptor (see IDLgrPolyLine)
List = Conn[Conn[0]:Conn[1]-1L]
Ptr = Ptr_NEW([N_elements(List),List])
For  i = 1, n_elements(X) -1 DO Begin
 List = Conn[conn[i]:Conn[i+1]-1]
 *Ptr = [*Ptr, n_elements(List), List]
EndFor

Poly = *Ptr & Ptr_Free,Ptr

poly1 = obj_new('idlgrpolyline', x,y,z, polylines = poly)

xobjview, poly1,/modal

if obj_valid(poly1) then obj_destroy, poly1
End
;--------FINISH
```

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Subject: Re: Repeats and Triangulation
Posted by Ben Tupper on Wed, 28 Feb 2001 00:31:02 GMT
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Hi,

I have tinkered with TRIGRID operating on XYZ data sets where there are a few repeated values of x and y with differing z values.

It looks like TRIGRID ignores repeated values... taking the value of the first z value only.

Ben

Craig Markwardt wrote:

> Ben Tupper <pemaquidriver@tidewater.net> writes:
>
>> Thanks Craig,
>>
>> I think I'll pursue you final suggestion. The tricky part there is that it is
>> possible to have indices repeated not only within column 1 but also apprearing
>> in column 2.
>>
>> Ben
>
> Yeah, but I think I handled that case. For example if REP contains
> the following entries:
>
> [2, 3]
> [3, 4]
>
> Then it is clear that entries 2, 3, and 4 are all identical poins. We
> want to keep one point at least. Thus, I used the DELMASK to delete
> the points indexed by the second column, REP(1,*). Deleting 3 and 4
> leaves only 2.
>
> By the way, I wanted to emphasize that the snippet of code I posted
> worked exactly as you wanted. You don't need to go beyond that if you
> don't want.
>
> Craig
>
> --
> ---------- ----------
> Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
> Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
> ---------- ----------

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