Subject: MESH_DECIMATE Gotcha
Posted by David Fanning on Fri, 02 Nov 2007 20:49:10 GMT
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Folks,

I just wasted another couple of hours on this, so I thought
I would mention it. (And perhaps write a small article about
it.)

I had a "blob" and I wanted to save this thing as a shapefile.
So I found the perimeter points of the blob with my FIND_BOUNDARY
program. But, because this program uses a chain-code algorithm,
the points are densely spaced (in fact, the pixels are right
next to one another). I wanted to eliminate a great many of
these points that were "over-determining" my polygon. So I
thought to use MESH_DECIMATE.

It seemed straightforward. My original polygon was a
3 by 701 array. I need that and a "connectivity array"
to pass to MESH_DECIMATE. The connectivity array is
simple. Since each point in the polygon is connected to the
next, it looks like conn=Lindgen(701).

OK, so I call MESH_DECIMATE like this:

```
  nverts = MESH_DECIMATE(polygon, conn, connout, $
     VERTICES=newVertices, PERCENT_VERTICES=30)
```

And, EVERYTIME I did so IDL would crash completely, in both
IDL 6.3 and 6.4 and on both my Windows PC and my LINUX PC.
Yikes!!

After MUCH consternation and fooling around, I noticed in a part
of the documentation far, far away from the MESH_DECIMATE documentation
that connectivitiy arrays should be specified in counter-
clockwise fashion. Of course, my chain-code algorithm works in
clockwise fashion. So I try reversing the connectivity array,
like this:

```
  nverts = MESH_DECIMATE(polygon, REVERSE(conn), connout, $
     VERTICES=newVertices, PERCENT_VERTICES=30)
```

That works perfectly!

Now I have a closer look at the MESH_DECIMATE documentation.
Here is how the connectivity array is described:

CONN Input polygonal mesh connectivity array.

I read the whole damn page again. Finally, I find this:

"For best results, all the polygons in the input mesh
should be convex."

No shit! For those of you who don't know, "convex" means specified in a counter-clockwise fashion. I learned that somewhere, but NOT in the IDL documentation. :-(

Just a word to the wise.

Cheers,

David

P.S. Maybe later this weekend I'll describe my adventure getting the shapefile thing to work correctly. :-(

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