Subject: Re: a polygon version of polyline..
Posted by Rick Towler on Thu, 30 Sep 2004 00:21:18 GMT
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George Millward wrote:

> I have a 3D object program which plots magnetic field lines (in 3D
> space) as polylines. This is fine - but I would like to change it so
> that they are coloured 'tubes' - polylines with a certain circular
> cross section and a 'shiny' finish. The look I am after is the one
> you often see with magnetic field topologies (Solar magnetic fields
> models etc.)
>
>
> Simple question is: does anyone know how to do this - or could they
> point me to a ready-made procedure.

I don't know of a ready made procedure, but I did work up something similar for someone a while back. I googled the group for "tube" and found the post. That approach won't quite satisfy since the OPer simply wanted to connect two points with a tube. You would have discontinuity at the joints if you took this approach.

This would actually be pretty simple. I started playing around with this but it isn't to a point where it is worth sharing and I would need some encouragement to get it there. (I am pretty busy right now)

For each vertex v[n] of your polyline you'll need to calculate r vertices which make up a circle about v[n] that lie on a plane oriented orthogonal to v[n+1]-v[n-1]. The ends present special cases where your plane will be orthogonal to v[n+1]-v[n] and v[n-1]-v[n].

Meshing these verts should be straight forward but I haven't thought it thru. I find that on most PC hardware quad strips render the fastest (vs tri strips). The IDL docs cover creating quad and tri strip meshes.

Speaking of hardware. Depending on the number of verts in your polylines and the value you choose for r, you will most likely need some decent hardware to manipulate this in real time. If you run into problems render your field as a polyline to orient it as you like then render it as your tube to create your output.

Hope this gets you started.

-Rick

> http://www.es.ucsc.edu/~glatz/field.html

That is a slick image... Do you know what software package they used?