Subject: Re: Compute_Mesh_Normals returns normal vector [0, 0, 0]
Posted by James Kuyper on Thu, 22 Jun 2006 17:40:42 GMT

spidersapiens@gmail.com wrote:
> According to the online help, the function "Compute_Mesh_Normals"
> should return "a 3 x M array containing a unit normal for each vertex
> in the input array.". However when I used it in my program, it's
> returning a couple ZERO vector [0, 0, 0] though the rest are normal
> unit vectors. What does zero vector mean in this case or should I say
> this is an IDL bug?

I'm not familiar with the algorithm used, though I assume it involves
calculating cross-products of the edges which meet at the corresponding
edge. However, you can imagine which situations might produce such a
result without knowing the details of the algorithm.

If all of the edges are parallel to each other, all of the cross
products would produce a 0 vector. If three edges meet at a vertex, and
two of them are parallel to each other, a simple average would involve
one cross product of exactly 0, and two cross products that exactly
cancel each other. This is just the mathematical way of saying that the
two pairs of edges give exactly conficting hints about the direction of
the normal vector. The same can be said if four edges meet at a vertex,
and any two of them are parallel.

Therefore, the thing you need to do is find out what the edges of the
mesh are, that meet at the vertices where the normal vector comes out
0.