

In article <1pscti\$aqe@travis.csd.harris.com> srp@travis.csd.harris.com (Stephen Pietrowicz)

writes:

>How do you go about orienting all normals in the same direction, given a

>set of points, edges and faces?

Look for edge inconsistencies. Consider two vertices, p and q, which are connected by at least one edge.

If (p,q) is an edge, then (q,p) should *\*not\** appear.

If *\*both\** (p,q) and (q,p) appear as edges, then the surface "flips" when you travel across that edge. This is bad.

Assuming (warning...warning...warning) that you have an otherwise acceptable surface - you can pick an edge, any edge, and traverse the surface enforcing consistency with that edge.

0) pick an edge (p,q), and mark it as "OK"

1) for each face, F, containing this edge (if more than 2, oops)

make sure that all edges in F are consistent (i.e., the Face

should be [(p,q),(q,r),(r,s),(s,t),(t,p)]). Flip those which

are wrong. Mark all of the edges in F as "OK",

and add them to a queue (check for duplicates, and especially inconsistencies - don't let the queue have both (p,q) and (q,p)).

2) remove an edge from the queue, and go to 1).

If a *\*marked\** edge is discovered to be inconsistent, then you lose.

If step 1) finds more than one face sharing a particular edge, then you lose.

Otherwise, when done, all of the edges will be consistent. Which means that all of the surface normals will either point IN or OUT. Deciding which way is OUT is left as an exercise...

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