Subject: How to turn a finely tesselated flat area into a couple of faces
Posted by bib993 on Tue, 08 Jan 2013 14:22:58 GMT
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Hi Shapers!

This is a screenshot of a simplified fractal model I'm working on.

For information, I get this mesh by applying marching cubes on a set of voxel slices (in a program called Fiji). As you notice, due to the marching cubes process, it generates a detailed grid and this consumes a lot of faces, so I'm hitting the 1 million limit (actually I have more than 5 millions faces in my mesh).

I am confident that this can be reduced a lot by simplyfing all these large flat beams into a couple of faces, because the small faces are well aligned (or at least they look so).

I have tried various options in Meshlab. So far I got the best results using the Quadric Edge Collapse Decimation, but due to the strong decimation factor, I get some inconsistencies and a mesh full of problems that Netfabb cannot fix automatically, and also it affects edges and detailed areas that I'd like to keep intact.

I also thought that the tri-to-quad filters could help to merge 2 adjacent triangles into a square, thus reducing by about 50% de number of faces, but it seems that doesn't work this way.

And I also can't prepare the mesh with some smoothing before decimation because that would soften the right angles all over the place.

Any advice on the best decimation strategy in this case? Testing all the options combinations in the Quadric Edge Collapse Decimation dialog takes a lot of time and trial and error, so I wonder if anyone has gone through this already? In particular, I am not sure if I should use the "Planar simplication" option or not.

Thanks!

Regards

bib

Subject: Re: How to turn a finely tesselated flat area into a couple of faces
Posted by bib993 on Tue, 08 Jan 2013 17:48:27 GMT
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Replying to myself

The key feature to do this is called "Merge co-planar faces". I will do more research but it looks quite promising with tools like Polygon Cruncher, and maybe Sketchup...

Subject: Re: How to turn a finely tesselated flat area into a couple of faces
Posted by bib993 on Tue, 08 Jan 2013 21:47:47 GMT
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I tried different software packages that offer the "Merge coplanar faces" feature but they're really slow or crashing even by just importing the mesh which has got 5.5M faces (248 MB STL file).

I thought Meshlab, which has got a wealth of specialized filters, would offer such a simple feature! That's sad because Meshlab is so efficient at handling large meshes.

Does anyone know a free program that can merge coplanar faces on large meshes? (Sketchup can do the job at DAE import time, but is too slow with large meshes).

Thanks

Subject: Re: How to turn a finely tesselated flat area into a couple of faces
Posted by JACANT on Tue, 08 Jan 2013 22:20:01 GMT
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Have you tried Blender?
http://wiki.blender.org/index.php/Doc:2.6/Manual/Modifiers/G enerate/Decimate

Subject: Re: How to turn a finely tesselated flat area into a couple of faces
Posted by bib993 on Tue, 08 Jan 2013 22:39:54 GMT
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Thanks for the link. It seems quite similar to quadric edge collapse decimation in Meshlab. What I'm specifically looking for is to simplify only 100% (or 99.9%) planar areas.