

Optimization module

Reducing polycounts since 2017

Optimization module

Table of contents

Reduce all

Reduce all input objects together

Reduce separately

Apply a reduction to single objects

Reduce dynamically

Different size, different reduction

Clipping

Remove below

Remove unseen Pt 1

Type of ray objects and their controls

Remove unseen Pt 2

Ray tolerance, moving detection and removal

Merge meshes [Experimental]

Combine objects into a single mesh

Reduce

Reduce all

Input geometry



Polycount: 22.208 tris
% of original: 100%

Reduced (tris)



Polycount: 4.440 tris
% of original: 20%

Reduced (quads)



Polycount: 4,372 tris
% of original: 20%

Reduce method: percentage

The two images on the right, have been reduced using the polycount %. This parameter allows you to reduce geometry to the given percentage.

Some things of note when using this parameter:

The percentage is a guideline. The tool will aim to reduce every object to around that percentage. Deviation should be expected.

Because the reduce mode is set to “reduce all” the tool will reduce everything separately. This means that when you input 5 objects with a total of 10k triangles and you reduce it to 10 percent.

The output will be around 1K triangles.

Preserve quads

When a good quad layout is required and present in the current model, this checkbox will allow for the preservation of said quads.

When this is active some things need to be taken into account:

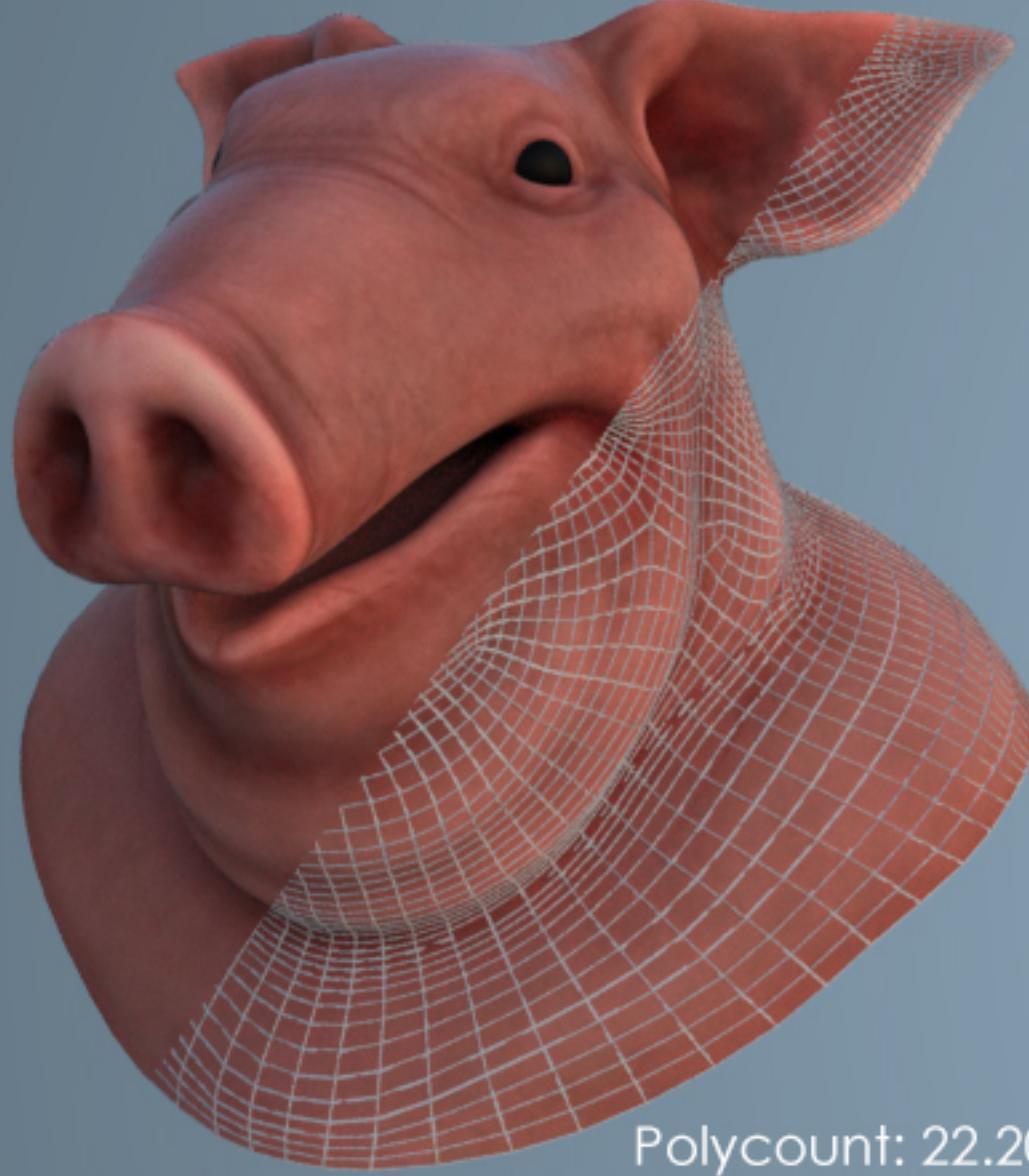
The polycount might differ when tris are allowed.

When no quads are present, this option will not matter.

Reduce

Reduce separate

Input geometry



Polycount: 22.208 tris
% of original: 100%

Reduced



Target polycount: 1600 tris
Polycount: 2.536 tris (per object)
% of original: 11%



Reduce method: Polycount

Using the “polycount” reductiong method you are able , to set a target polycount. The input geometry will then by reduced to be near this polycount using the earlier defined reduction type (All, separate, dynamic).

When using this option please note that the target polycount can differ from the output polycount (as can be seen in the example above).

This is due to the quality control the tool uses. When this drops below a certain value, reducetion will stop.

Using percentage instead will allow you to go lower.

Reduce separately

When the “reduce separate” is selected, the tool will take every object and apply a reduction per object.

This means, that regardless of the scale, topography or other factors the tool will try to get the target count.

For scale aware reduction use the “reduce dynamically”.

Reduce

Reduce dynamic

Input geometry



Total polycount: 66.624 tris (3 objects)
Polycount: 22.208 tris
% of original: 100%

Reduced



Total polycount: 10.284 tris
Polycount: 4.772, 3.126, 2.386 tris (per object in order)
% of original: 20% to 5%



Reduce dynamic

When a lot of the same object is present in a scene at different sizes, the reduce dynamic is the most efficient.

Using the reduce dynamic you are able to setup a minimum and a maximum percentage of polygons. Internally, the tool calculates the per-object total area and blends between the percentages. This gives larger objects more polygons than smaller ones. (As shown above).

This feature works optimally when used with multiple instances of a single object,

Clipping

Remove below

Input geometry



Polycount: 44,416 tris
% of original: 100%

Clipped (1 edge shift)



Polycount: 38,917 tris
% of original: 86%

Clipped (4 edge shifts)



Polycount: 40,552 tris
% of original: 91%

Clipping: remove below

Using the clipping option you can select a landscape (or another clipping plane) and various assets to clip.

This option will remove the bottom of the geometry (seen above).

When the "remove below" option is selected, the polygons are removed.

If the "colour" box is checked, the polygons are given vertex colour.

This colour can be accessed through a material.

Move below-edge

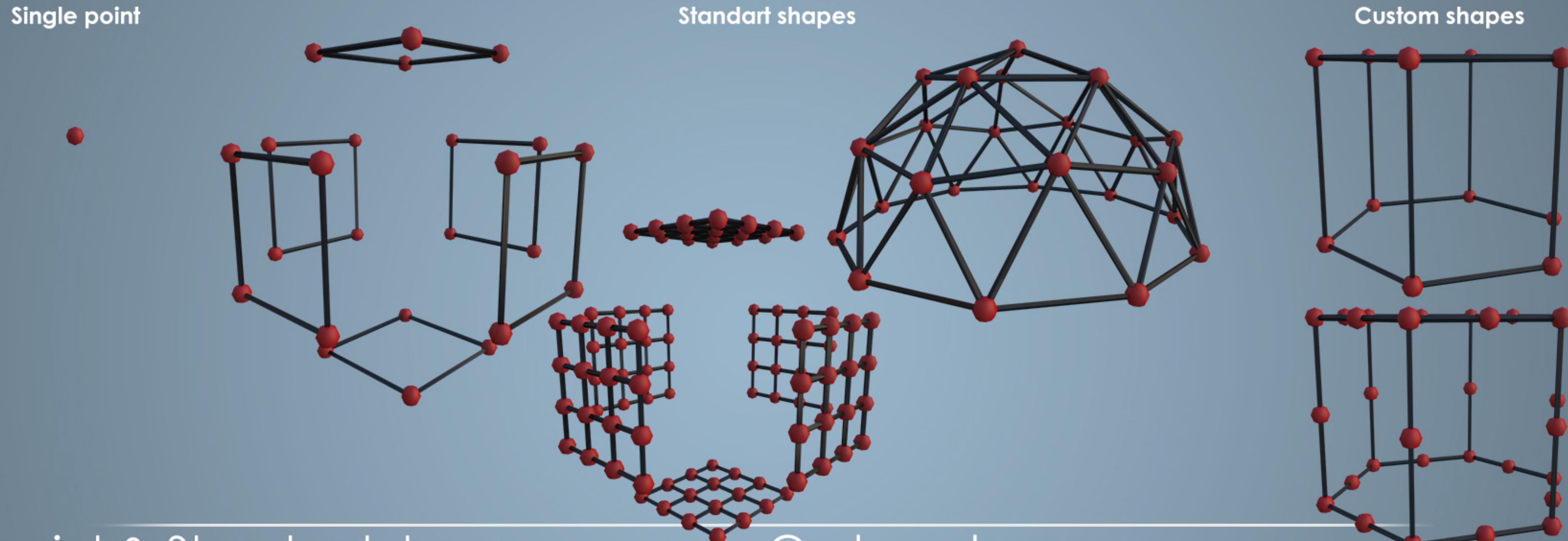
With this option you can move the section of polygons that are tagged for removal.

Above you can see what this does: the removed amount of polygons are decreased in number.

This can be desirable, when some points aren't properly clipped and the removal line needs to be shifted.

Remove unseen

Pt 1, different culling objects



Single point & Standard shapes

Using the single point and standard shapes, the tool provides a method of selecting points and removing them.

The single point can be moved as needed where the standard shapes provide control over scale and point density (the top standard shapes are on low whilst the centre lower one is on medium).

Using these you can select points for removal.

The amount of points is useful if more area needs to be covered.

Something to keep in mind:

The standard shapes appear at the 0,0,0 location. This can cause troubles when selected objects are not there.

Custom shapes

If necessary, a custom shape can be provided.

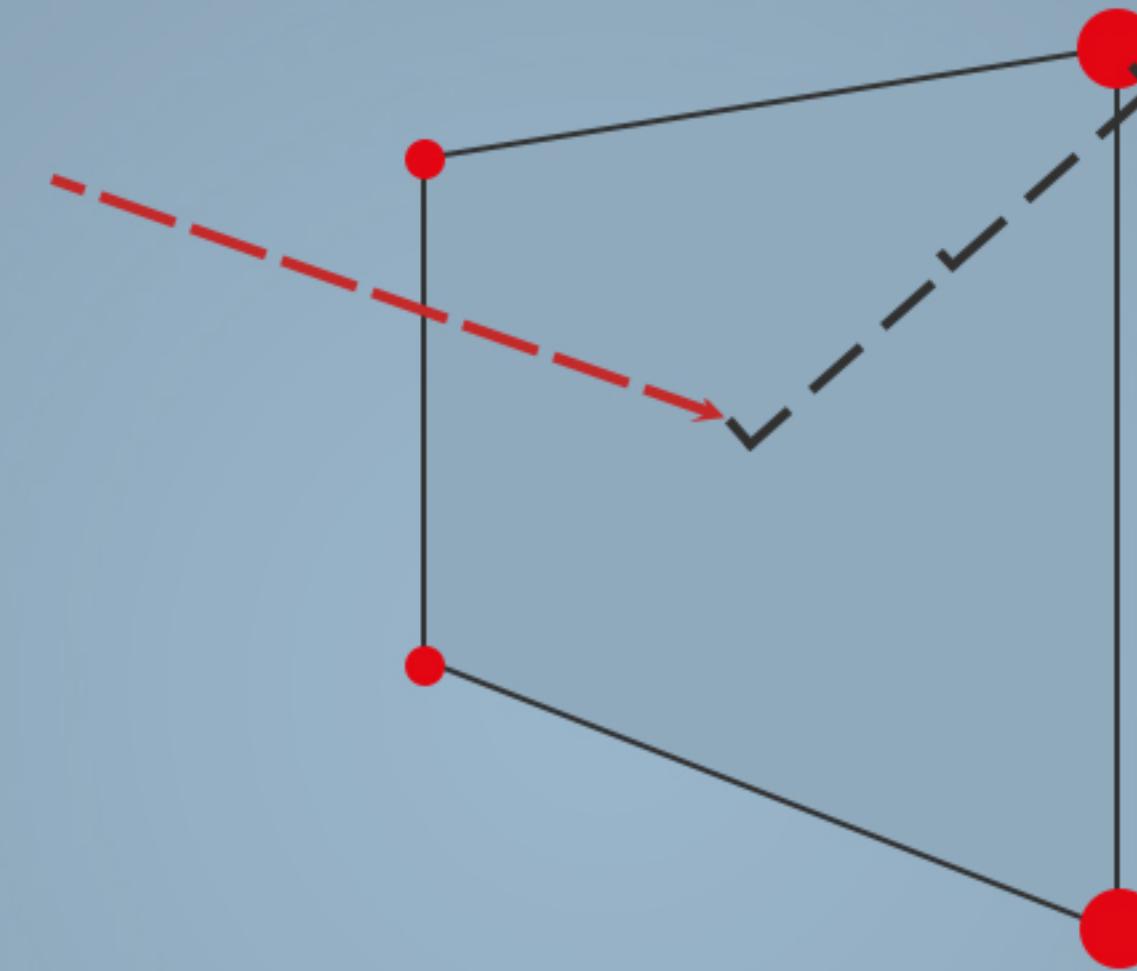
This can be any type of polygonal mesh input in the third input.

When needed, the amount of culling points can be increased as seen in the lower right image.

Remove unseen

Pt 2, Tolerance and removal

Ray tolerance



Ray tolerance

When the remove unseen tool is used, rays are shot out from the points seen on the previous page.

When these points hit a surface, the ray tolerance is used to see whether the hit is valid or not.

If the ray tolerance is higher, the actual hit can be further away from the target point thus, removing more points with less accuracy.

Moving detection & removal

Just like in the clipping optimization, the ray points can be moved to create fewer detected points (less polygons removed).

The default is 2, this is to ensure that points still in vision, aren't removed. The removal option is also similar to other ones where it will remove the polygons when checked.



For any further support
Contact me at:
15059@nhtv.nl
NHTV - houdini experts discord
In person