

SimTenero Voxelizer

User Guide

Core Concepts

This bit isn't critical. The script handles all of this stuff for you, but understanding these concepts may help you make better use of Voxelizer. If it looks boring, feel free to skip ahead to "Getting Started." :-)

- **What's a Voxel?** - A voxel is to 3-Dimensional space what a pixel is to a 2-Dimensional image; it's a fixed unit of measurement that divides up the entire space.
- **Voxel Resolution** - You may be familiar with 2D image resolution. For example, your monitor might have a resolution of 1920 pixels wide by 1080 pixels high. For a 3D image, we simply add another dimension to the mix; X units wide by Y units high by Z units deep. The Voxelizer script handles this for you by automatically subdividing a 3-Dimensional space into smaller chunks of 8 (called 'octants'). This allows Voxelizer to represent resolution with a single number. Each dimension, X, Y, and Z, will be 2 to the power of the resolution, the entire space will have *up to* (though typically far less than) 8 to the power of resolution voxels. So, for a resolution of 4, the dimensions X, Y, and Z are each 2^4 , or 16 wide by 16 high by 16 deep, for a total area of 4,096 voxels.
- **Voxelization Area** - This is the total space which will be subdivided into voxels. The actual size of each individual voxel will be relative to the size of the voxelization area you started with. The Voxelizer script will establish an area based on the largest dimension of the objects you've selected (this can be altered, see below). A standing figure, for example, will be much taller than it is wide or deep. Let's say the figure is 2 meters high; the voxelization area will then be 2m wide by 2m high by 2m deep. As in our previous example, let's say you voxelize this figure in it's 2m cubed space with a resolution of 4 (resulting in 16x16x16 voxel space). Each individual voxel dimension would be 1/16th of 2 meters, or 12.5cm wide by 12.5cm high by 12.5cm deep. If you voxelize a larger space, each voxel will also be larger. You'll want to keep this in mind when deciding on a resolution.

Getting Started

A step-by-step introduction to SimTenero Voxelizer.

1. Open Daz Studio and create a new, empty Scene.
2. Load a figure into the scene (for this example, we will be using Genesis 3 Male). Voxelizer supports any number of objects, including figures, props, and clothing. For the purpose of this tutorial, we'll keep it simple and voxelize just one object.
3. Locate and run the Voxelizer script, located in your content library under Scripts/SimTenero/Voxelizer.
4. Click the Select Objects button in the upper left of the script window.
5. Select (by placing a checkmark beside) your figure.

6. Double click the figure name to reveal a list of its materials. Here, we can exclude different parts of the figure we don't want to bother voxelizing (or that we may want to voxelize individually later). You can include or exclude any materials you like, or see the screenshot below and use the recommended tutorial settings.
7. Click Accept.
8. Check the "Show Voxelization Area" box. A blue cube will appear in the viewport. This serves 2 functions. First, only portions of objects inside this area will be voxelized. Second, this area determines the size of the final voxels. The larger this area, the larger individual voxels will be. The default encompasses the entire figure, which is fine for this tutorial. You can uncheck the box again to hide the blue cube.
9. Set the "Voxel Resolution" slider in the upper right of the script window to 6. There is a dramatic increase in voxel-count with each resolution step, so while the max of 8 might seem low, it can actually result in millions of voxels (see above). Always experiment with lower resolutions and come up as needed. 6 is a good place to start for this example.
10. Check the "Solid Colors" box. You should see a popup warning about map resolution. Hit ok. Voxelizer offers 2 methods of applying texture maps to voxelized objects (see below). By checking "solid color" each face of each voxel will be a single color.
11. When you checked the "Solid Color" box, the Map Resolution at the bottom of the script window should have been set automatically to 256. This is fine for this tutorial. See below for more details on Map Resolution.
12. CLICK VOXELIZE! The voxelization process will now run. The time it takes to complete will vary based on the number of faces/polygons in the objects, the materials you've included or excluded, the size of the voxelization area, and, of course, your CPU speed.

Important Note: If you are voxelizing a figure with hair/clothing, be sure to check the "Grow Morph" box before voxelizing. You can use these morphs to correct overlap issues.



1. Select Object - Click here to see and select objects that can be voxelized. Place a check next to each item you would like to voxelize. Double click an object name to specify which materials you would like to include and only parts of these objects assigned to those materials will be voxelized. Objects voxelized at the same time will share a voxel size.
2. Voxel Resolution - Set a voxel resolution level, 2 through 9. **IMPORTANT NOTE: The higher the resolution, the longer the voxelization process will take to run. Levels 8 and 9 involve checking millions of voxels and can be particularly intensive.**
3. Show Voxelization Area - When this box is checked, a blue cube representing the voxelization area will be displayed in the viewport. Only portions of objects within this cube will be voxelized. **IMPORTANT NOTE: The voxelization area also informs the size of each individual voxel. Look at the bottom of the Voxelizer window to see how changes to the voxelization area affect voxel size.**
4. Create Grow Morph - When this box is checked, "Grow/Shrink" morphs will be generated for each voxelized object. These morphs can be useful for keeping layers above/below one-another. Morphs are located in the Parameters Pane/SimTenero/Voxelizer.

5. Solid Colors - When this box is checked, Each side of each voxel will be a solid color. When this box is unchecked, each face of each voxel will adopt the UV coordinates of one of its contained faces. Because very little texture information is required to create solid color voxels, it is strongly recommended that you select a lower resolution map output when using solid colors (256 will be selected for you when you first check this box).
6. Area Scale - This slider grows and shrinks the voxelization area (see item 3 for more detail).
7. Voxel Area Translate Sliders, XYZ - these sliders will move the voxelization area along the X, Y, and Z axis.
8. Map Resolution - When set to "Full Resolution," no change will be made to object materials. When a number is selected, new texture maps will be created at that resolution (e.g., selecting 512 results in 512 x 512 maps). These new images will be saved under new file names ending in "_LowRes" in the folder location of the original map. The original images are not modified or affected. The "_LowRes" textures will be overwritten each time the process is run. Creating lower resolution maps can result in quicker render times without impacting visual quality, though it does increase the time required to complete the voxelization.
9. Voxelize Button - Clicking this button initiates the voxelization process.
10. Voxel Data - This area of the windows displays information about the voxelization process based on current settings. These numbers will change in real time as you modify settings.
 - a. Voxel Size - This number represents the X,Y,Z size of each individual voxel given the current resolution and voxelization area.
 - b. Voxels Per Side - This number, based on the current resolution setting, indicates how many voxel wide, high, and deep the voxelization area will be.
 - c. Max Voxel Count - The number of voxels produced will vary based on settings and the size of the objects relative to the voxelization area. The Max Voxel Count is the maximum possible number of voxels that can fit into the space at the given resolution.