Using Blender NFS MW 2012 Exporter addon by DGlorio

Driver Model Replacement Tutorial by SwiftZC33S & PolySoupList

Download Link for the addons: https://github.com/DGlorio/nfsmw_exporter

This tutorial will show you how to import a driver model to replace the existing one.

Along with this tutorial, it is A VERY GOOD IDEA to watch DGI's introduction video and look at the sample Blend files he has made available.
Some existing Blender knowledge is needed to make full use of it.

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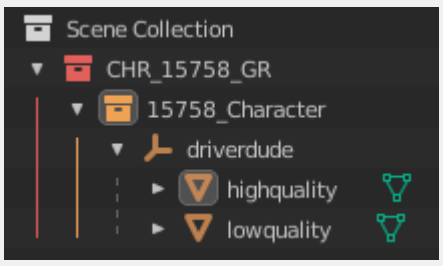
Overview

The Exporter addon requires your Blend file to be set up with a specific hierarchy of **Collections** and **Empty Objects** which will contain the model's **Meshes**.
In order to tell the Exporter what to do with those objects, you will add Custom Properties to them.

This is a short example of a hierarchy for a character:

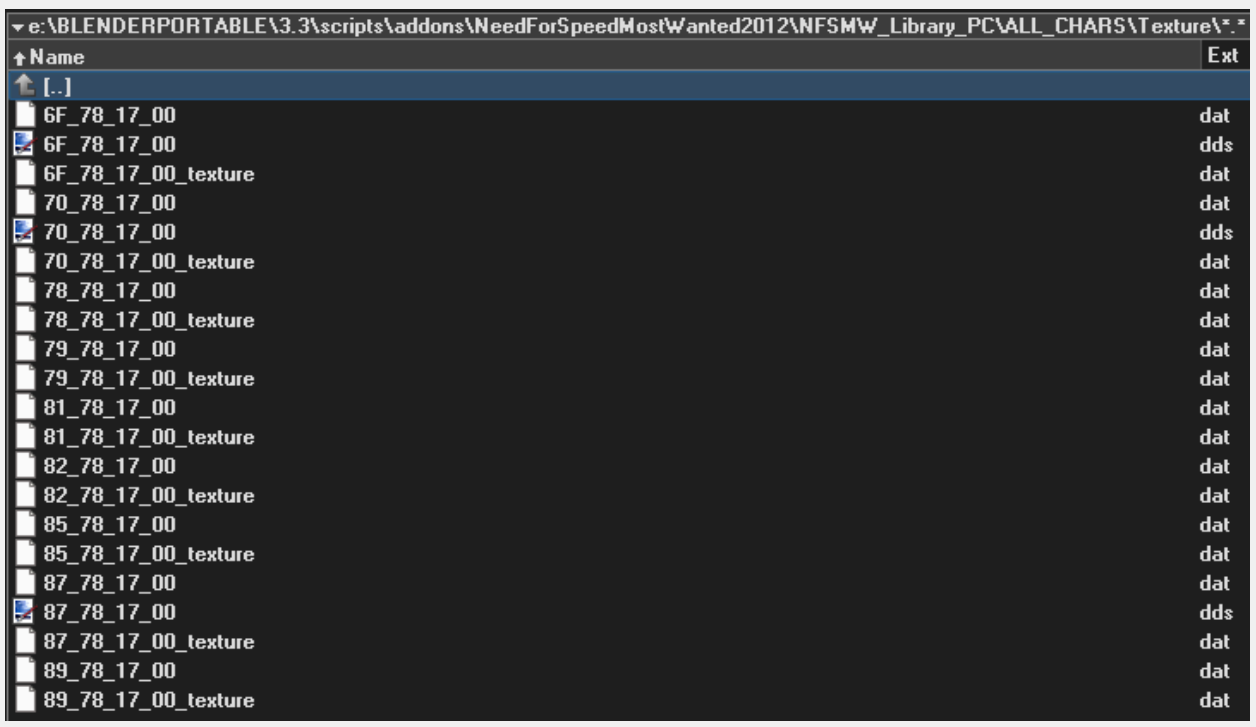


Collection: `CHR_number_GR`	The `number` should be one of the existing ones and that driver model will be replaced. `15757` - Cop `15758` - Driver with normal seatbelt `1538141` - Driver with harness
Collection: `number_Character`	The `number` should be the same as above.
Empty Object: `driverdude` etc	One Empty Object for each mesh. Can be named anything.
Mesh: `highquality` etc	One mesh under each Empty Object. Can be named anything. Use more than one mesh for different LODs.

Warning: There is a hardcoded limit on the overall size of the files within ALL_CHARS.BNDL. A total of just 97 kilobytes extra can be added. A driver model that's too high poly cannot work because of that. If the files end up too big, the game crashes at startup.

Extra space can be freed by resizing some of the existing large textures.
Get some downscaled original textures here.
Then either:

- After export, repack them into the ALL_CHARS.BNDL or
- Before export, place them in the Blender library folder at
  `Blender install folder\3.6\scripts\addons\NeedForSpeedMostWanted2012\NFSMW_Library_PC\ALL_CHARS\Texture`



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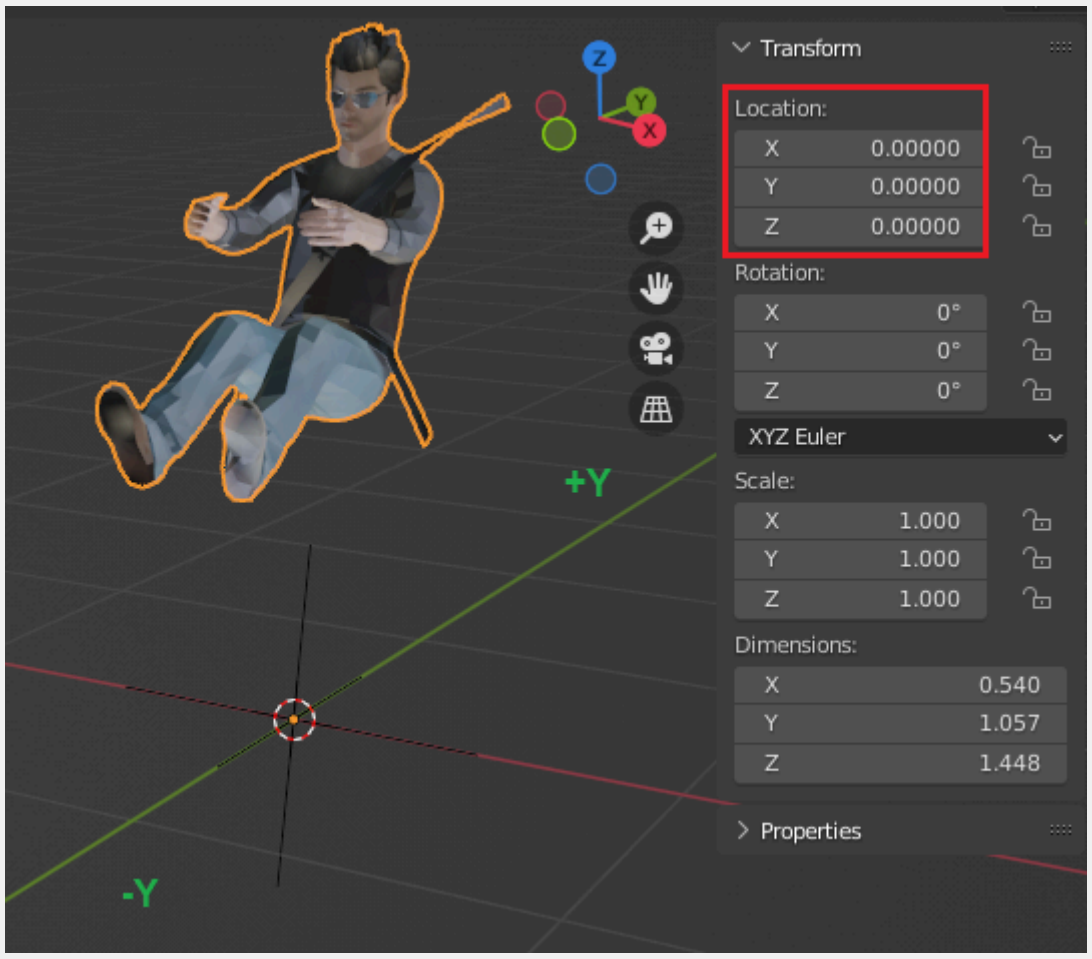
Create a hierarchy

Import your new model to Blender.

Make the front of the character face towards the **-Y** axis and the Location should be all 0 on the XYZ axes.



1. Add Collections

a. On the right under `Scene Collection`, add a new Collection and rename it to **`CHR_number_GR`** where **`number`** is a number as above or a new one.
(If there is already a Collection with Blender objects such as Camera and Light you can delete those)

b. Add one more Collection named **`number_Character`**

2. Add Empty Object

a. Add one Empty Object for each mesh. They can be named anything you like.

b. Move the Empty Objects under the **`number_Character`** Collection. (drag and drop it on top of the Collection)

3. Associate Meshes with Empty Objects

a. Put one mesh under each Empty Object. (drag and drop it on top of the Empty, while holding SHIFT)

b. If you have different LODs they can go under the same Empty Object.

4. Add Materials to each mesh

a. Each mesh needs to have a minimum of one Material. If you downloaded the model from somewhere else, it might have them already. Otherwise, add at least one.

5. Add Textures

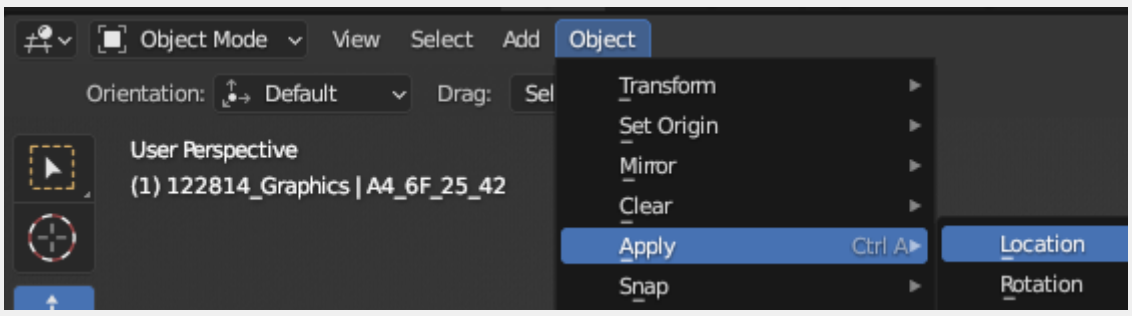
a. Select the Material that requires textures.

b. Drag textures into the Shading window or add them via **Add**>**Texture**>**Image Texture**. You don’t have to connect them to the shader.

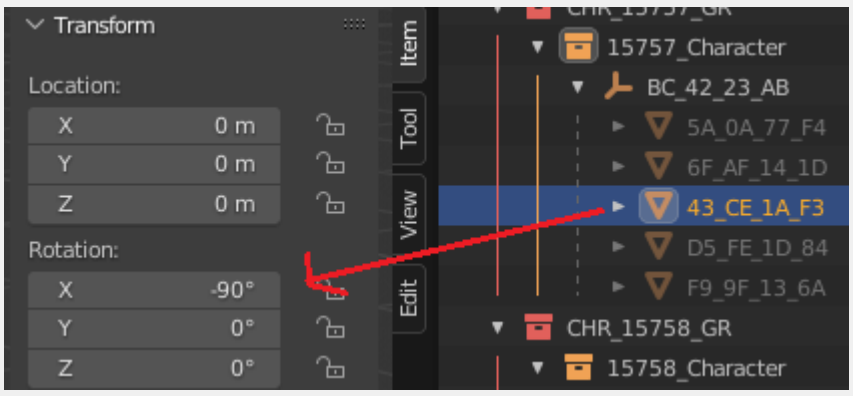
NOTE: If you don’t have all textures to add for a certain Material, don’t worry. The Exporter assigns default textures if needed.

Set the correct location and rotation

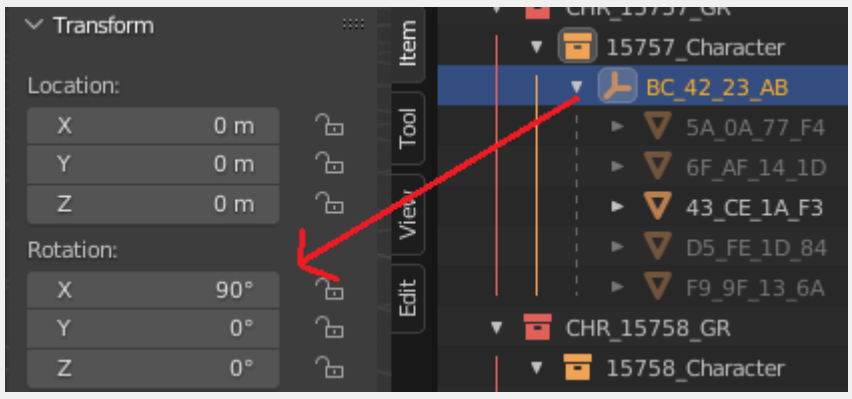
1. In Object Mode do the following:
    a. Check that the **XYZ Location** of all Meshes is 0. If it is not, select the meshes and go to the **Object** menu > **Apply** > **Location**.



    b. In the **Transform** panel, set the **X Rotation** of the meshes to **−90** and then go to the **Object** menu > **Apply** > **Rotation**.



    c. Select each Empty Object and use the **Transform** panel to set the **X Rotation** to **90**. <u>But **do not** apply rotation</u> to the empty objects.



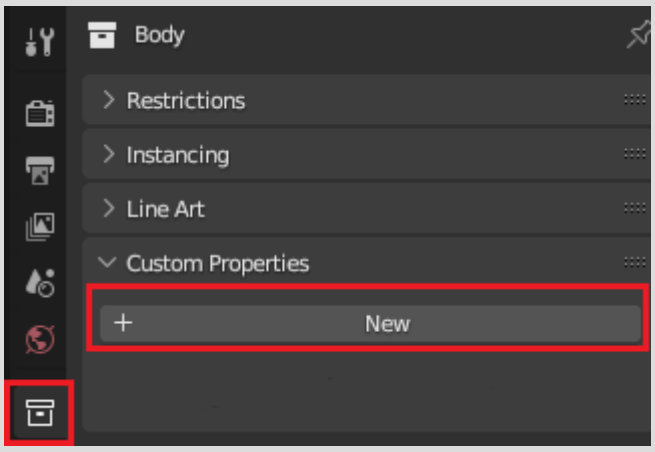
Set up the custom properties

You will use the below procedure to add the Custom Properties:

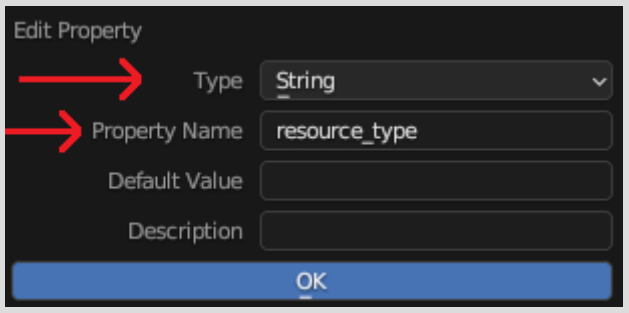
How to add a Custom Property to anything

1. On the right of Blender, click on the relevant Panel.

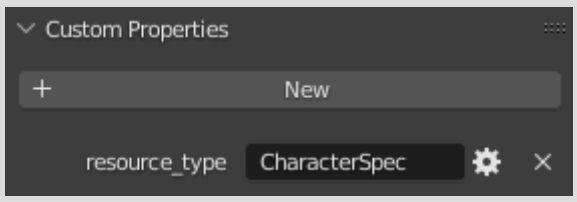
2. Scroll down and expand **Custom Properties** > click the **New** button.



3. Click the Gear icon next to the field that appears.
The **Edit Property** box appears - set the correct **Type** and **Property Name** then click **OK**.



4. Enter the relevant value.

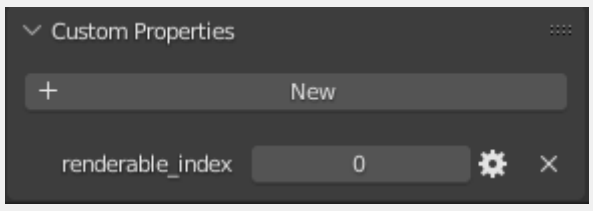


1. Add a Custom Property to all Collections

A. Make sure you are on the Collection Panel
B. Click on a collection.
C. Add one Custom Property with **Type:** `String` **Property Name:** `resource_type`
D. The value is `CharacterSpec`
E. Do the same for the other collection.

2. Add a Custom Property to Meshes

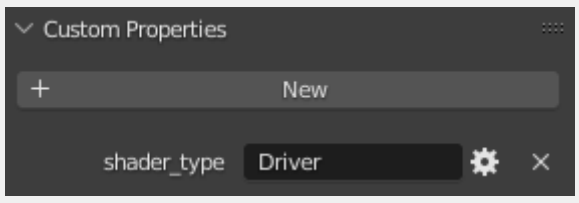
A. Make sure you are on the Object Panel
B. Click on a mesh.
C. Add one Custom Property with **Type:** `Integer` **Name:** `renderable_index`
D. The highest LOD mesh should be set as `0`
E. If you have more LODs they can be numbered `1` to `4`



3. Add a Custom Property to Materials

This is where you tell the Exporter what shader to use for each Material.

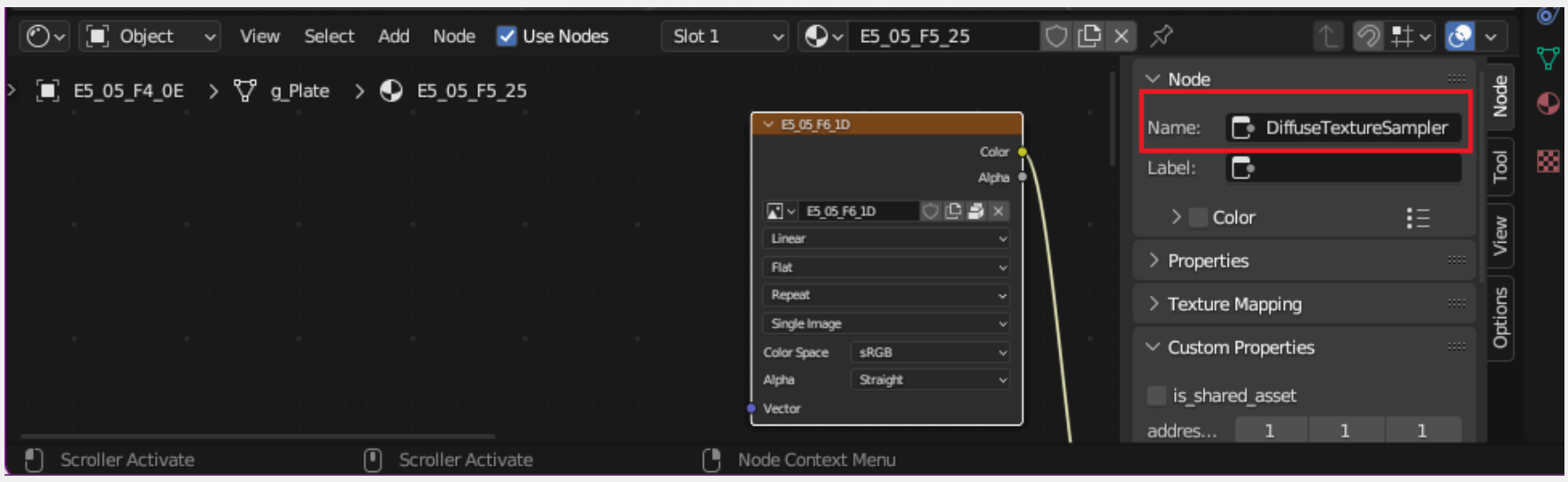
a. Make sure you're on the Material Panel
b. Click on a Material
c. Add one Custom Property with **Type**: `String` **Property Name**: `shader_type`
d. Enter `Driver` or `Character`



`Driver` or `Character` is the short name for `CharacterNew_Opaque_Textured_Normal_Spec_VertexAO` (this is the one used by all characters)

4. Textures

a. All textures need to be given a specific **Node name** in Blender. The file name DOES NOT matter. It is the **Node name** that's important here.
b. In the Shading window, where you have placed the textures earlier, click on each texture and name it in the **Node panel**.
c. The texture names supported are: `DiffuseTextureSampler` `NormalTextureSampler` `SpecularTextureSampler`



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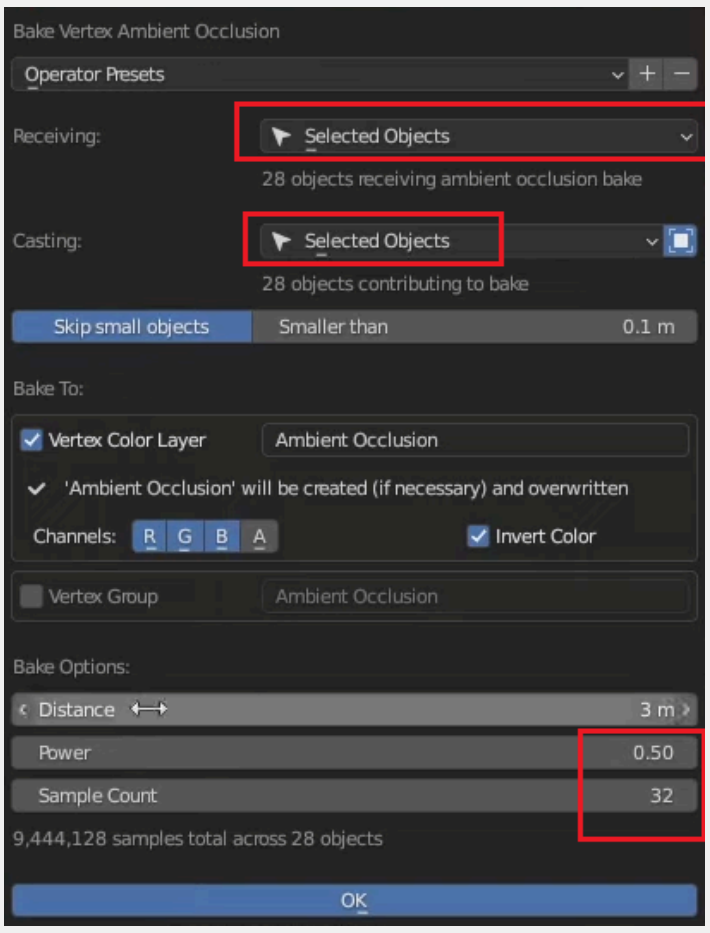
Vertex ambient occlusion

If you have set the `shader_type` to `Driver` or `Character`, the model requires ambient occlusion in vertices colour data. It's not necessary to do this step if the model already has vertex colour data.
You can use VertexOven linked on the Github page to generate vertex AO.
Select which objects should have AO and set **Receiving** and **Casting** to **Selected Objects**. Set the power to **two** and sample count to **64**.

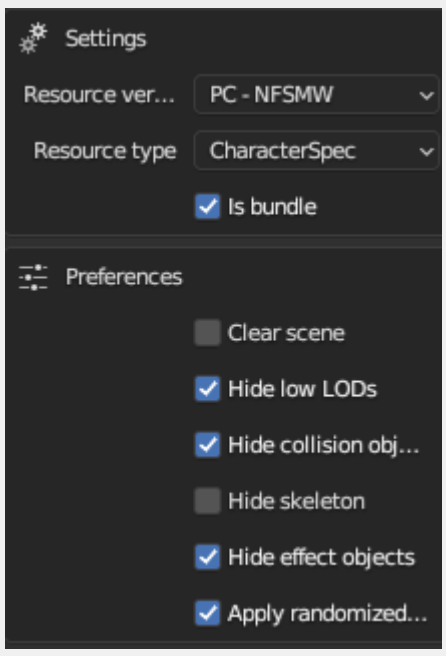


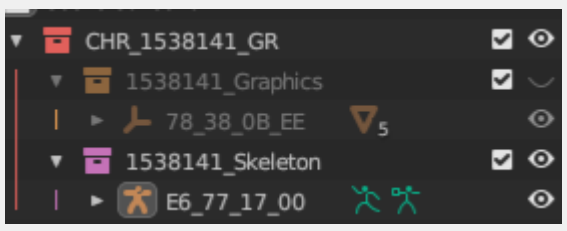
Driver animation

(still working on this bit)

Load the skeleton

Import the original ALL_CHARS.BNDL into Blender - don't forget to untick **Clear Scene** and **Hide Skeleton**.
You can then hide or delete their `xxxx_Graphics` collections and contents.





Drag the `xxxx_Skeleton` collection and its contents on top of your *new* collection, so that its parent is now the new collection.

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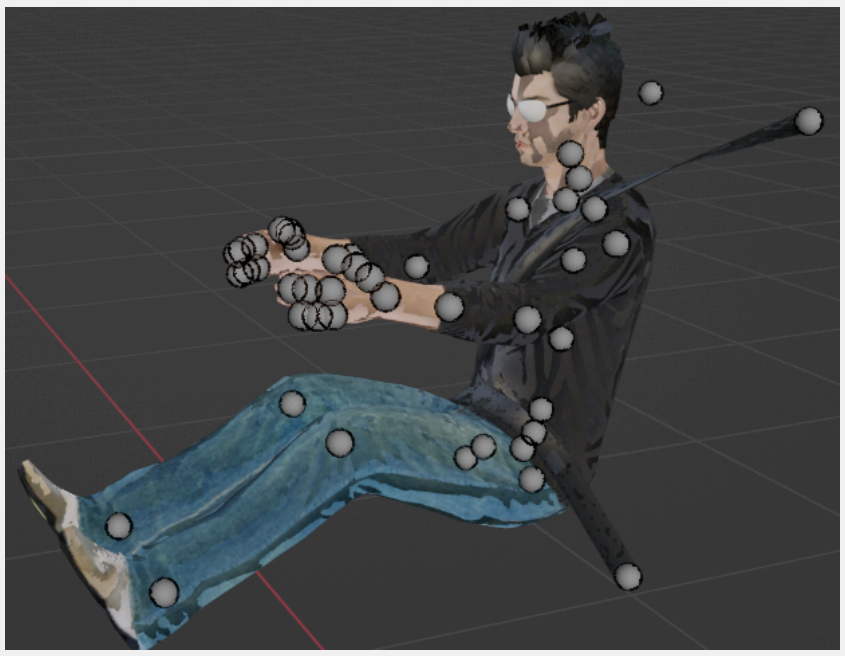
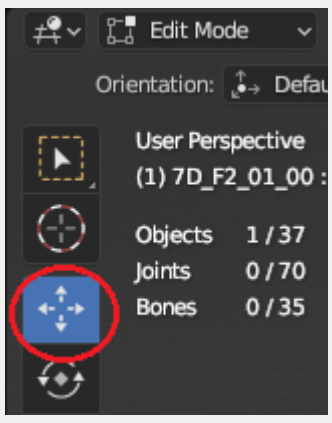
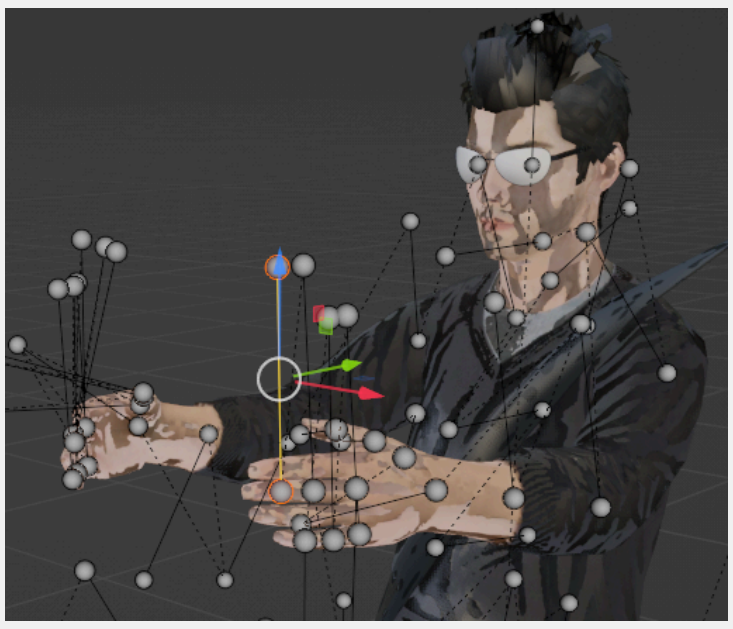
Adjust the bone positions

With the Skeleton collection loaded from the original driver, there are a number of spheres visible. Each sphere represents a bone used for animations.



To move a bone, click on any sphere (they will all be selected), then go into **Edit mode.**
The view will change a bit - each bone is split into two spheres joined by a line.
Click on one of the spheres to be moved, press **CTRL+ L** to select both, then use the **Move** tool so they move together.

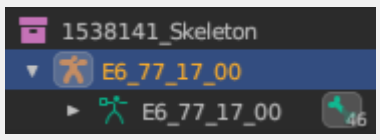




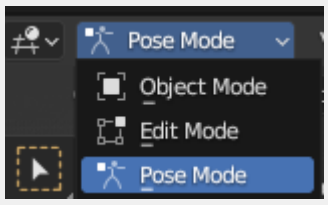
Identify the bone name (Sensor_xxx)

Weight Paint mode will be used to assign vertices to a bone and to set the weight/influence that the bone has on them.

In **Object Mode**, click on any sphere, or click the **Armature Object**.



Go to **Pose Mode** and click on a sphere to see the name of it.



Assign vertices to a bone

Select the mesh and create a vertex group with the same name as the relevant `Sensor_xxx`.
Go to `Weight Paint` mode.

Select the vertex group you created.

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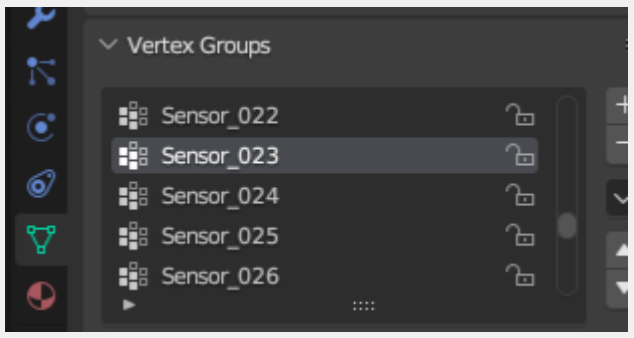
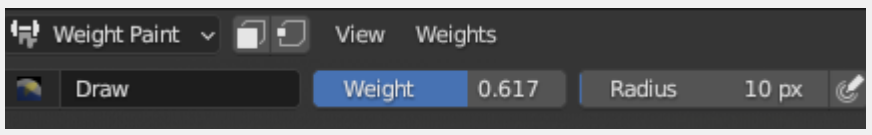
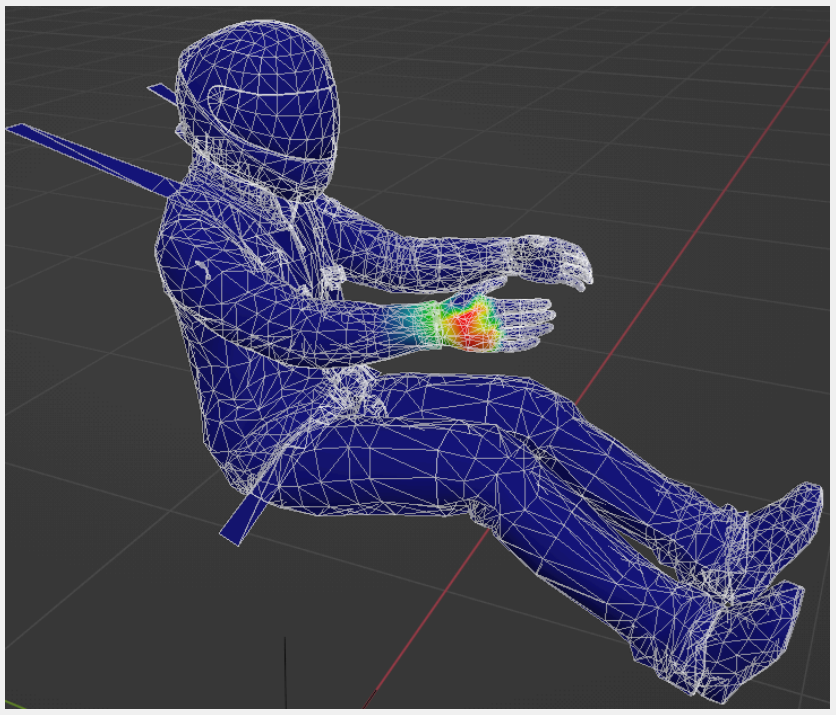


Select the brush size and weight to use.



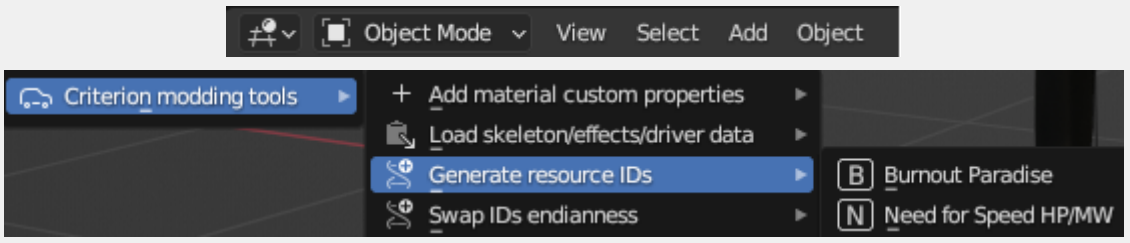
Paint the vertices that should be influenced by that Sensor/Bone. They'll be automatically added to the vertex group.
Weight 1.00 (red) means that the vertex will be 100% influenced by the bone and Weight 0 (dark blue) means no influence.
(Look at an existing character in Weight Paint to get an idea of how you can paint it)



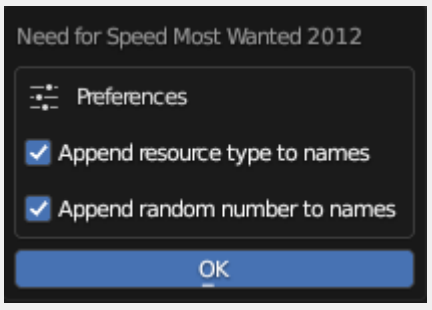
Generate resource IDs

The last step before exporting is to generate resource IDs so everything you've added can work in game.

- Make sure you're in Object Mode, click **Add** > **Criterion Modding Tools** > **Generate Resource IDs** > **Need for Speed HP/MW.**

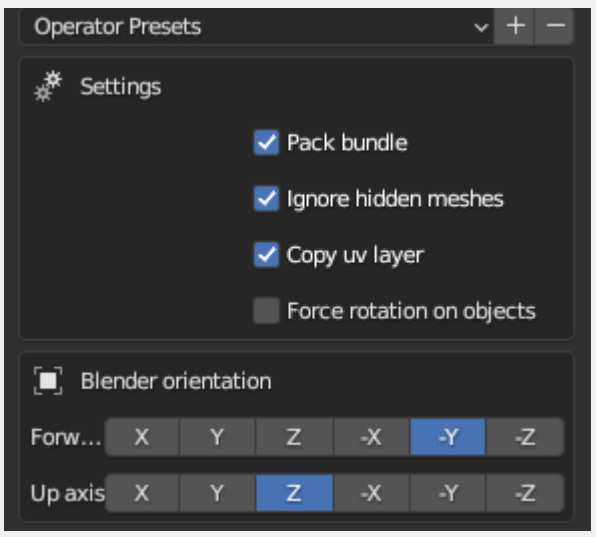


- A box will appear. Leave both options ticked and click OK.



Exporting

- Before you start, ensure everything to be exported is visible
- If you previously imported the original driver model to use some of its data, ensure everything related to it is hidden
- To export go to **File** > **Export** > **Need for Speed Most Wanted (2012) (.dat)**
- Give it a name and select the options you want on the right panel, then click the **Export to folder** button.



➔ `Pack bundle` - Pack all exported files into the BNDL file
➔ `Ignore hidden meshes` - If you have hidden any meshes they won't get exported
➔ `Copy UV layer` - Copy the first UV map layer to the other UV map layers where needed.
➔ `Force rotation on objects` - Check this if your car got exported in the wrong orientation (for example if you forget to set the 90° rotation on each mesh as mentioned earlier)
➔ `Blender orientation Forward Axis and Up Axis` - Set the orientation of your model if it is different

To check the progress or any error messages click **Window** > **Toggle System Console**.