

How to Apply Motion Capture on Avatar (FBX)

In this tutorial we will introduce two methods.

Quick and dirty method

We first introduce a fast method, which involves no animation cleaning. It only works for mixamo characters, or alike, where the names of the bones and the rig is very standard. This also assumes the source motion is characterized, which is not generally the case.

1. Take the character in the asset browser and drag it directly on the hips (root of the skeleton). Then, directly press characterize, select biped, and it will create your character.
2. Merge the .fbx scene where your motion data is.
3. To preview how your source animation looks like in your target character, do the following:
 1. Select the source from the animation (we are assuming the mocap has been characterized). Notice that in character settings you can adjust how the animation is transferred.
 2. In Character Settings, select plot Character. You will have two options: Skeleton, and Control Rig. If you select "skeleton", the animation will directly be ready for export. If you select control rig, we can further adjust with layers and IK where it goes

Once selected the option, it will ask some parameters. If your data is at 60fps (or you don't know), select 60fps.

If you selected control rig, you can clean up, and then to export you will need to

3. in Character Settings, plot to the skeleton
4. Select the skeleton root (hips) and all the sons (select branches)
5. Go to File > Save selection

Then, in unity3D:

1. Import the .fbx with the tpose, in the assets folder select it,
2. go to the inspector and select
rig>humanoid

and

avatar definition> create from this model

this is the crucial reason you need to have a Tpose

3. Import the .fbx containing the animation and again

4. go to the inspector, and select:

rig > humanoid

and

avatar definition > copy from other Avatar

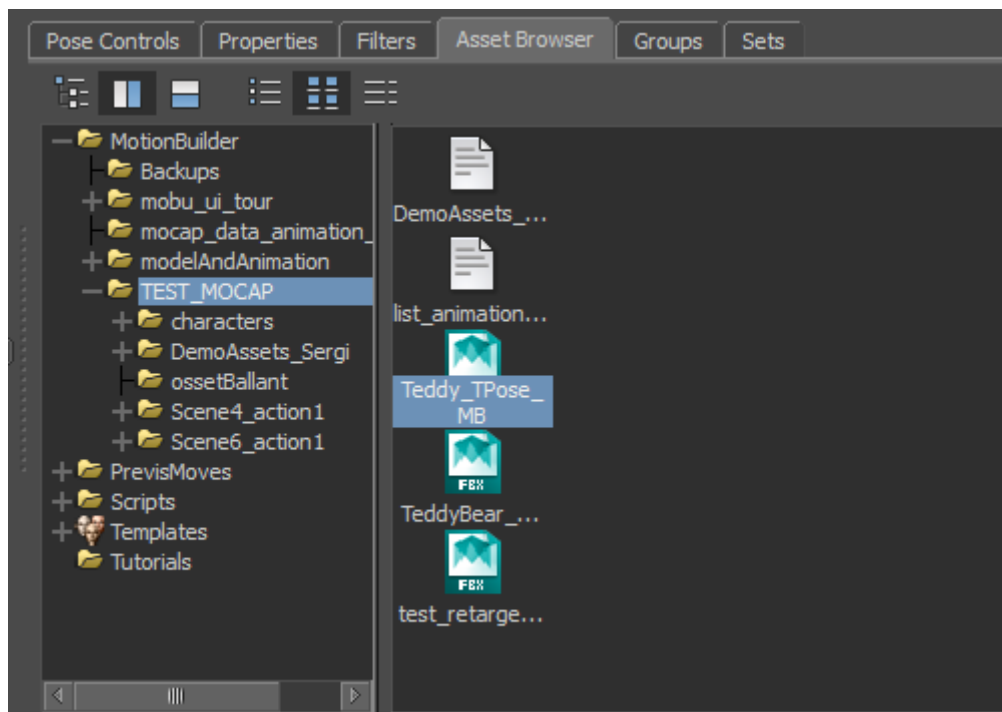
and then select as source the one created with the Tpose. This prevents many problems with fingers and strange postures

If you want to do it with the Legacy system, make sure you select legacy both for your character and for the animation file.

Systematic method

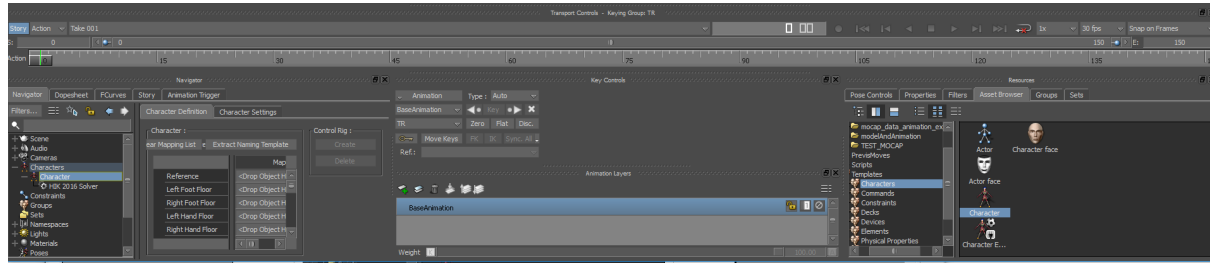
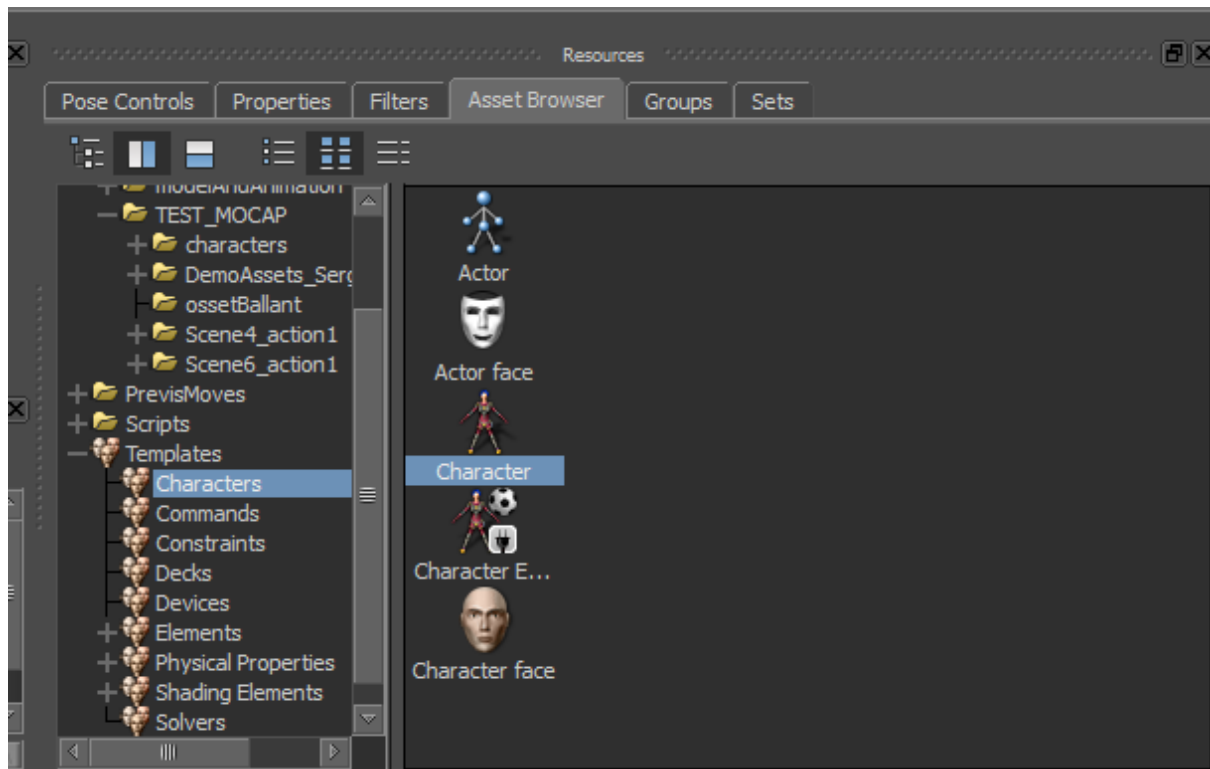
Step 1 – Characterize a character (3d Max biped or any other)

1. Drag avatar (must be in .fbx format, if in max export as .fbx) from Asset browser into the Viewer panel (FBX Open → <No Animation>).



Note: If avatar does not appear in the Asset browser under the Resources → right click: Add favourite path and navigate to the working folder.

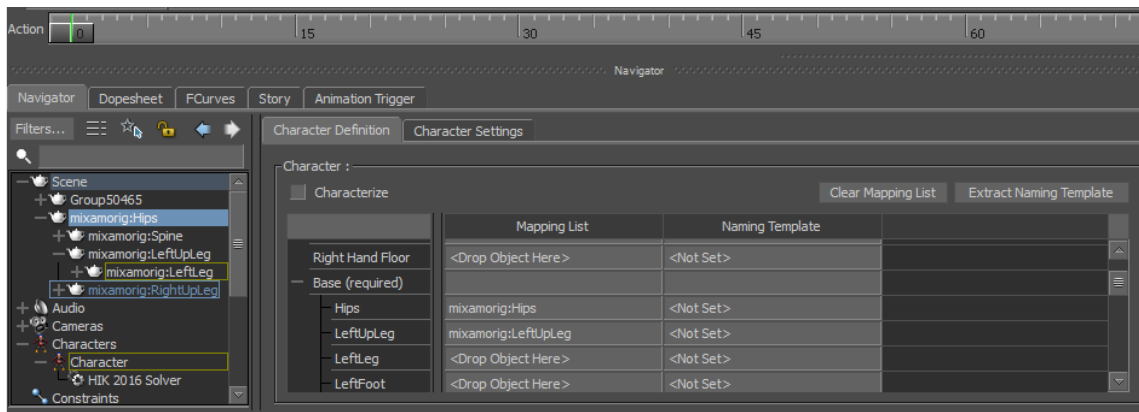
2. In the Asser browser under Templates → Character select Character or 3ds Max Biped Template and drag it into Viewer. The Character Definition window will automatically open in the Navigator (If not it can be found in the Navigator under Characters → Character)



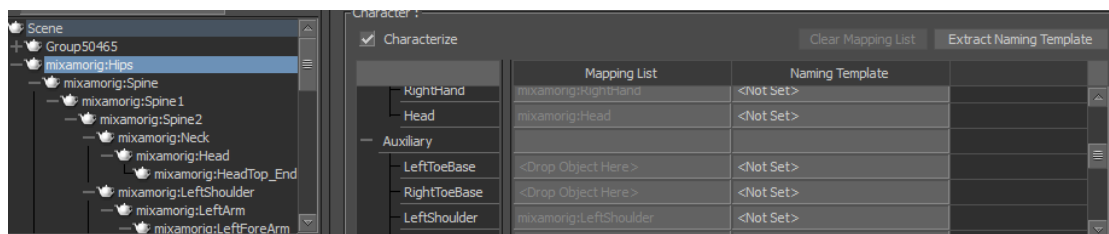
The idea is to populate the empty Mapping List with the bones of the avatar (see 3 below)

Note: To be able to see the bones of the avatar click Ctrl+A in Viewer until you enter X-Ray mode, and then Ctrl+W to frame all nodes and change in schematic view (each rectangular represents a node-bone).

3. To map all bones to the Mapping List slots Alt+Drag each node-bone into the appropriate slot (<Drop Object Here>). It is necessary to fill in the Reference and all Base(Required) slots.

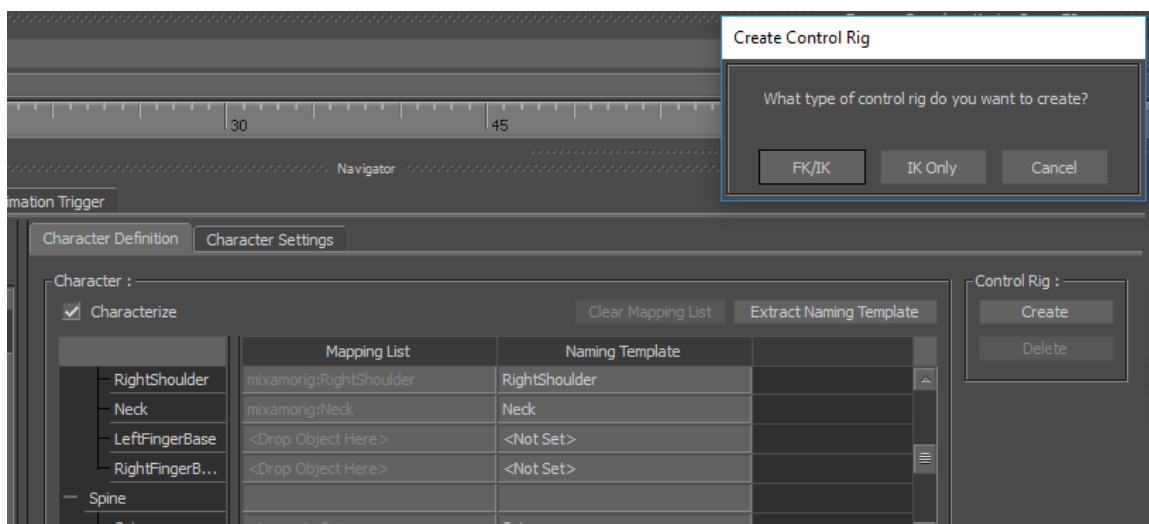


4. Activate Characterize button → select Biped

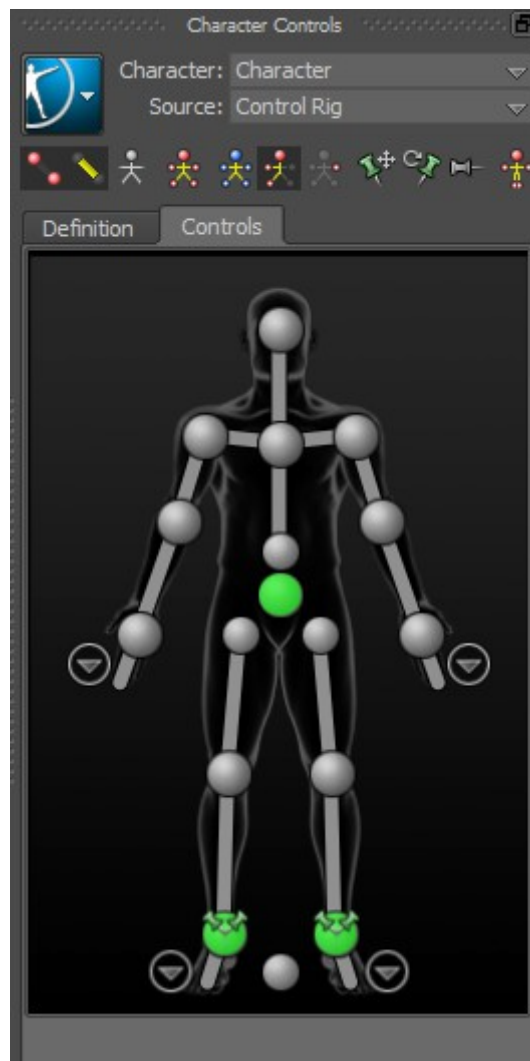


optionally, you can also extract the naming template.

5. Go to Control Rig → Create → FK/IK



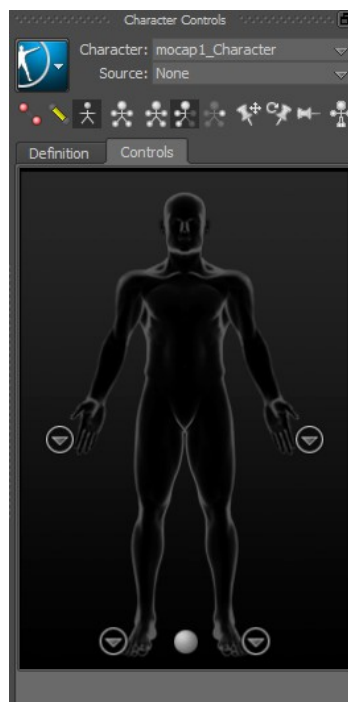
6. Under Character Controls (top right pane) the source should be now Control Rig



Note: The Control Rig can be renamed from the Navigator under Control Rigs to avoid confusion when applying the motion capture.

Step 2 – Characterize the Animation File

1. File → Motion file Import (select motion file).
2. Asset Browser → Templates → Character → select Character and drag it into Viewer
3. Follow same procedure as in Step 1 in order to populate the character definition with the bones of the animation. Here again the Base is required!
4. Once the Characterization of the animation file is complete select under Character Controls → Source: None



5. Click on the Main Icon button in Character Controls (left to Character and Source) and select Bake (Plot) → Bake (plot) to control rig... → check Plot all takes (if the animation file has more than one takes you wish to map)

Step 3 – Apply characterized animation file to the virtual model

1. Open the characterized animation created in Step 2 above and Import characterized .fbx avatar into the working area (Viewer): FBX merge → <No Animation>
2. In Navigator → Characters select the avatar (make sure not to select the animation instead)
3. In Character Controls → Character: (select the avatar from the list) and under Source: (select the control rig of the previously characterized animation – NOT the control rig of the characterized avatar).
4. Character Controls → Main Icon → Bake (plot) → Bake (plot) to control rig... → check Plot all takes.
5. Can now delete the old animation skeleton from the Navigator.
6. In order for the animation to play outside MB you will also have to Bake(plot) → Bake (plot) to Skeleton...

Step 4 – Clean final animation

1. Navigator → FCurves open BaseAnimation and check rotations and translations for each bone if they need tweaking , smoothing etc (example tutorial at: https://www.youtube.com/watch?v=XxHi7_pXN-k time: 30:00 on)
2. Correct further positions and rotations as desired (e.g hands colliding with the body etc) by adding keys in the animation timeline (better to use animation layers to avoid confusing the keys). Bone must be selected to apply key and see the applied key.