

CHARACTER RIGGING

Corso Realtà Virtuale 2021/2022

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Download it from GitHub in the folder Exe6_rigging



WITH BLENDER 2.8



RIGIFY ADD-ON

Blender provides a ready basic humanoid skeleton for character's rigging, it is a separate Blender's add-ons package.

You can add Blender's Community or Official packages / tool to your project in:

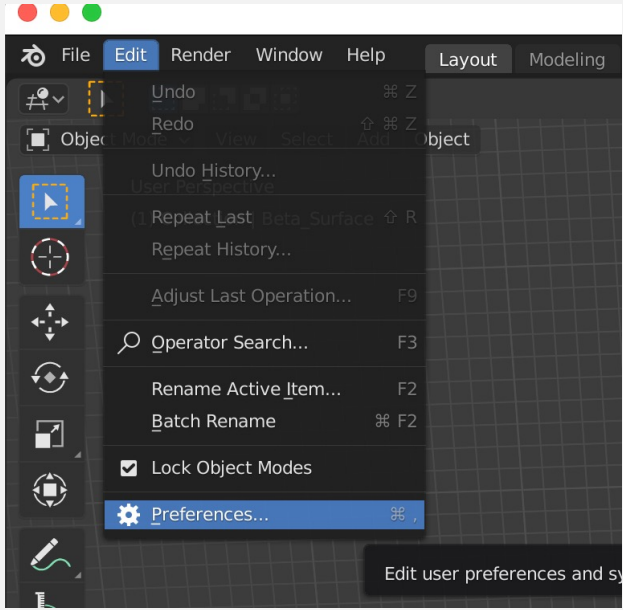
1. Edit > Preferences
2. Click on Add-ons
3. You can search the package by writing a part of package's name near the lens symbol, we will search the term "rigify"
4. we will add the package "Rigging: Rigify" by checking the box

<https://docs.blender.org/manual/en/latest/addons/index.html>

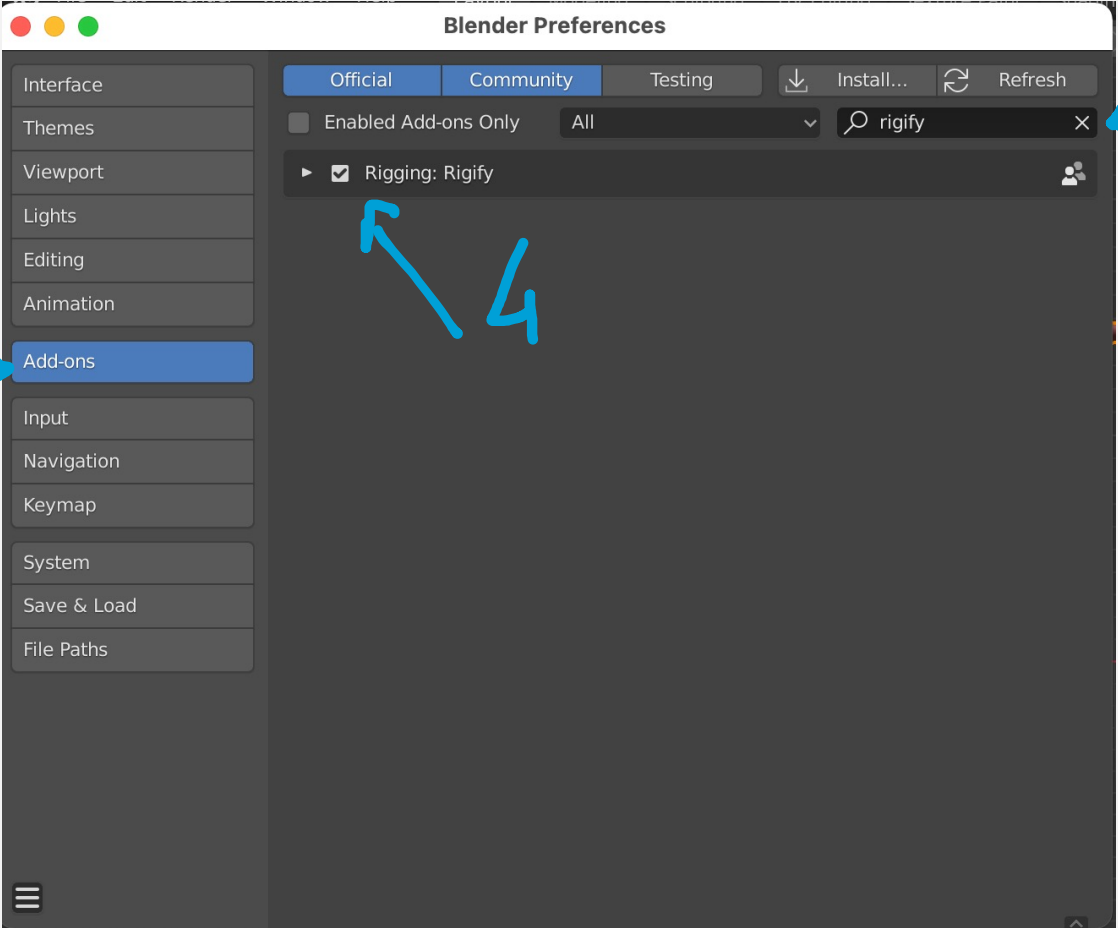


RIGIFY ADD-ON

1



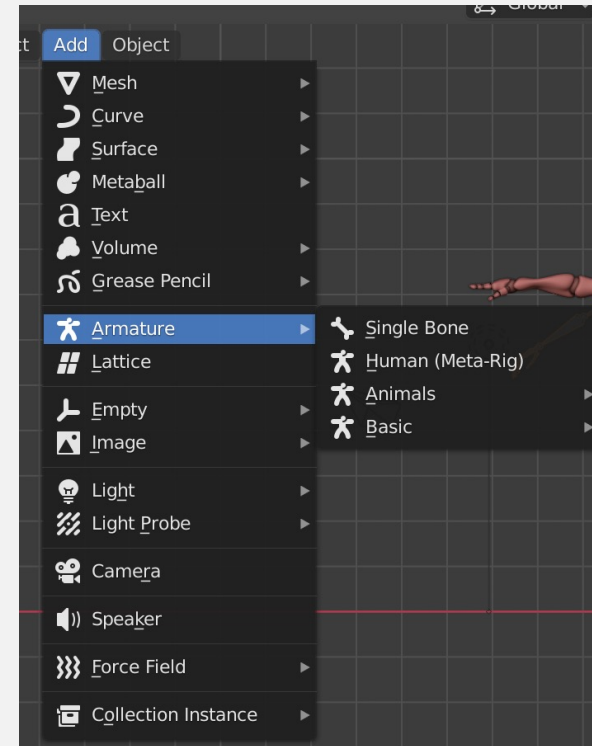
2



ADD SKELETON

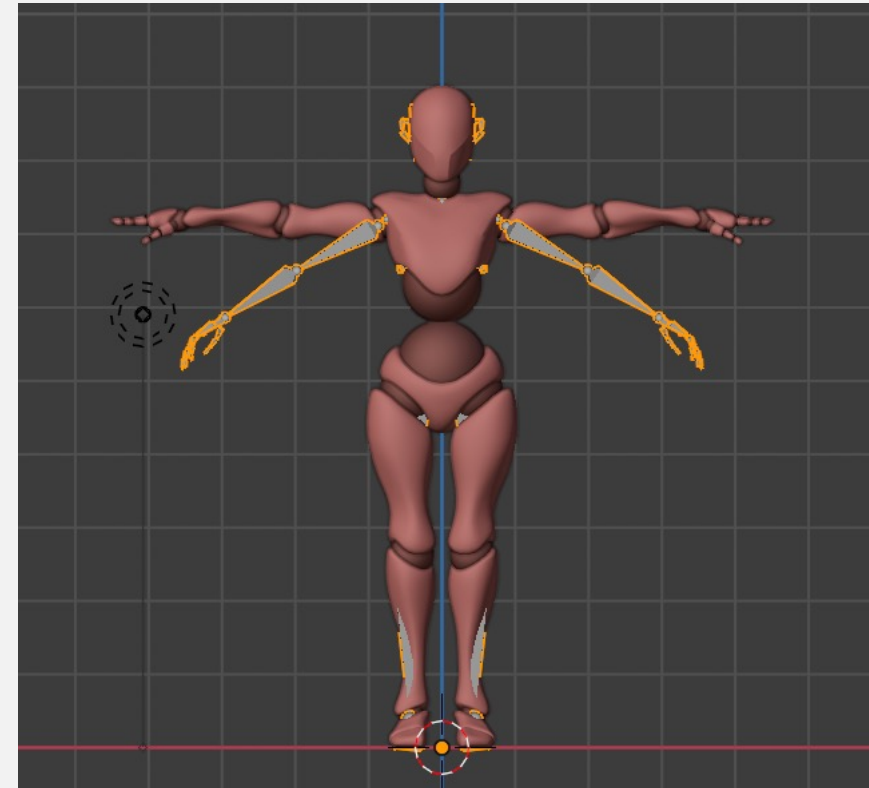
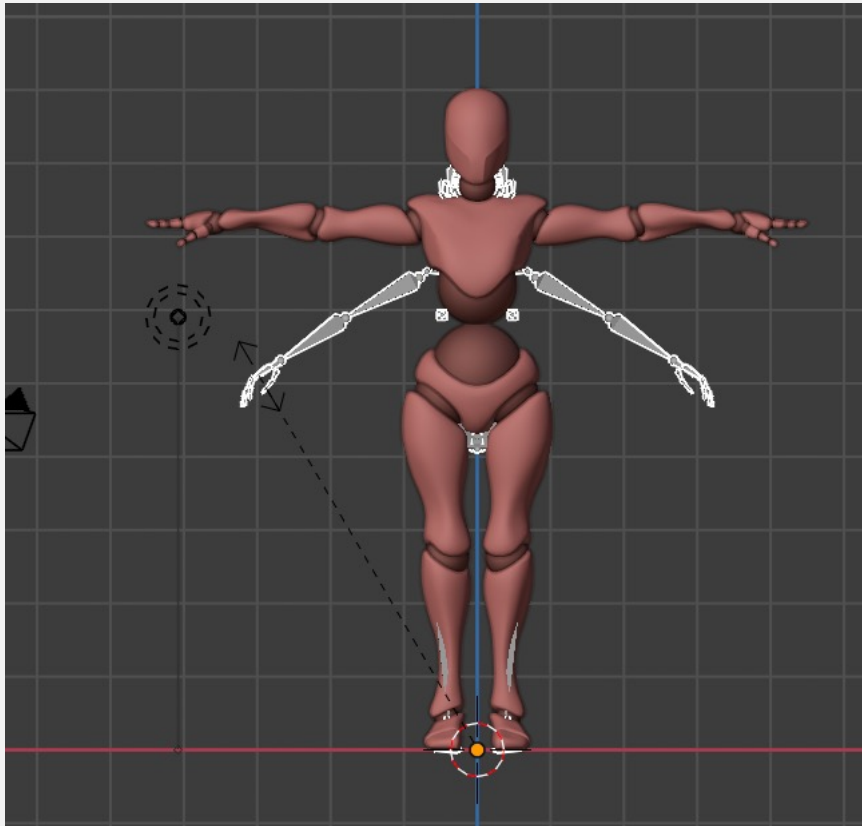
Now we will add a skeleton to the avatar:

1. Click on the “avatar” collection
2. Click on Add > Armature > Human
3. Now in the “avatar” collection the object “metarig” appears, click on it



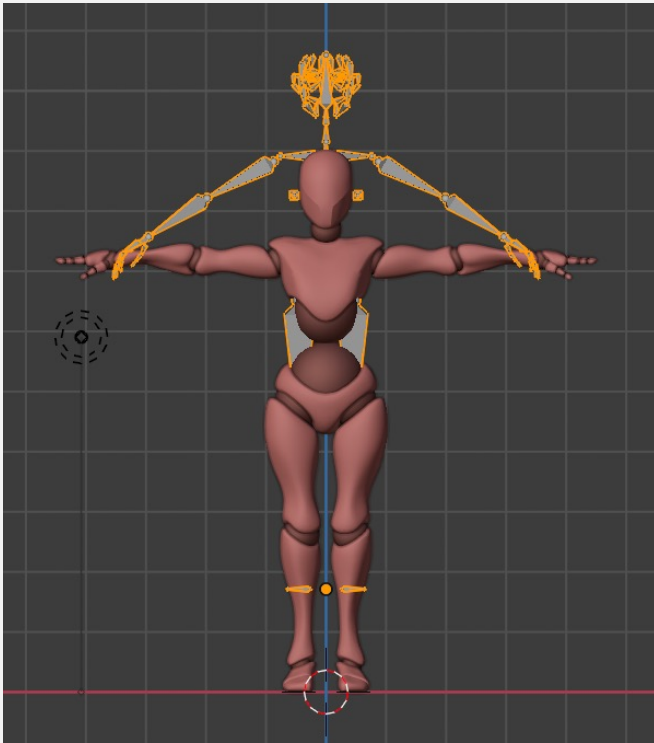
ADD SKELETON

4. Scale with hotkey [S] to make it coincide with the avatar

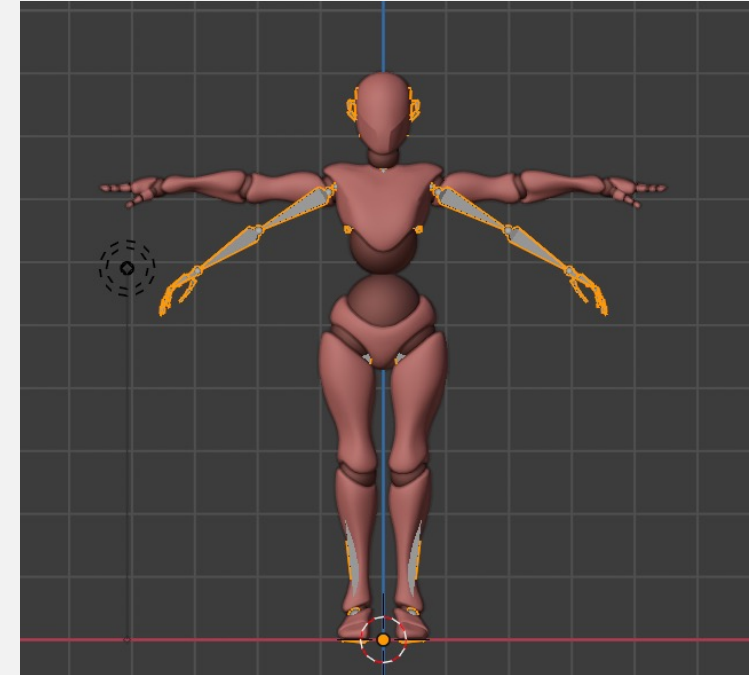
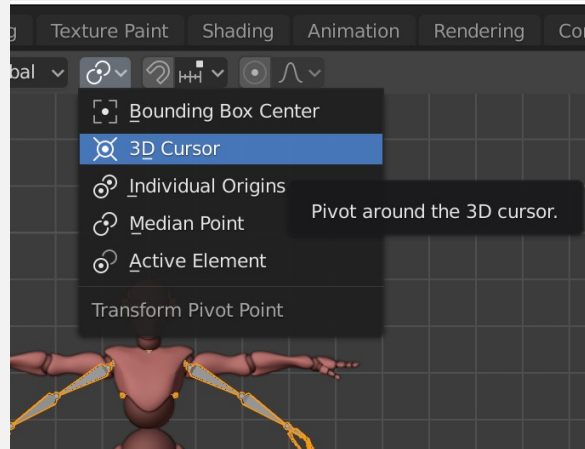


ADD SKELETON (OPTIONAL)

You can enable the Pivot around the 3D cursor before scaling to be sure that the metarig's feet will stay fixed in the same place while you are scaling the metarig



Without 3D Cursor



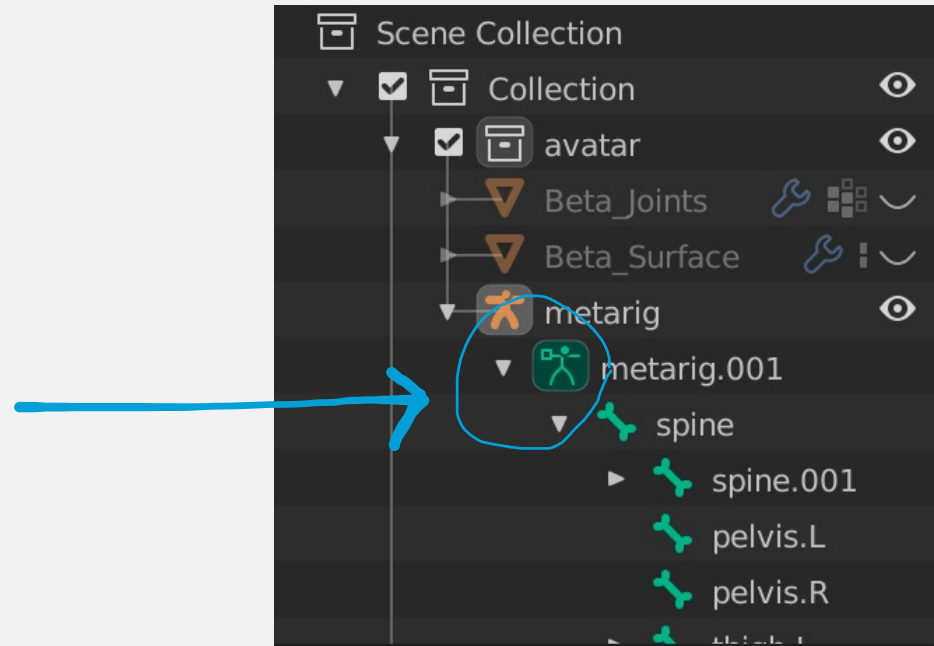
With 3D Cursor



CHANGE THE SKELETON

You can delete the parts of the skeleton you don't need:

- Enable Wireframe View
- Click on the metarig green symbol to enable the selection of skeleton's parts



- Now in the viewport (with Wireframe view) you can select a single part of the metarig

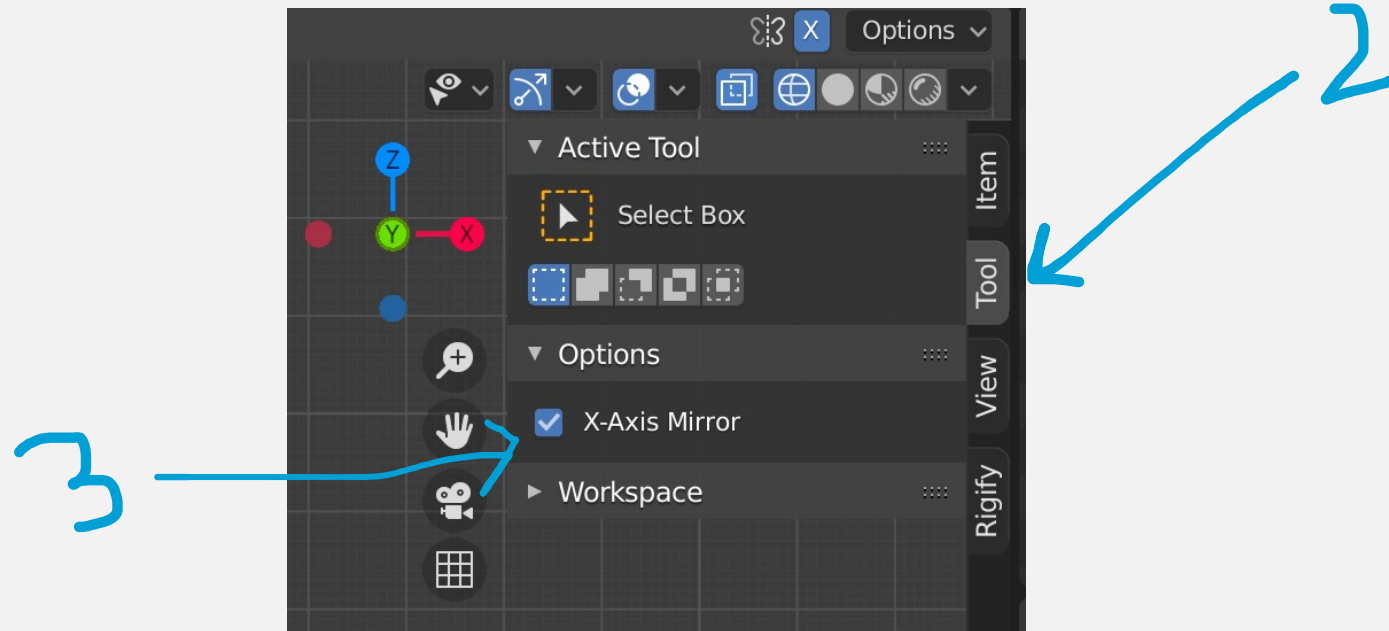


CHANGE THE SKELETON

Now you can adjust the bones to coincide with the avatar with [S] scale, [G] grab and [R] rotate.

To facilitate this step you can also enable Mirroring, to mirror the action along the x axis:

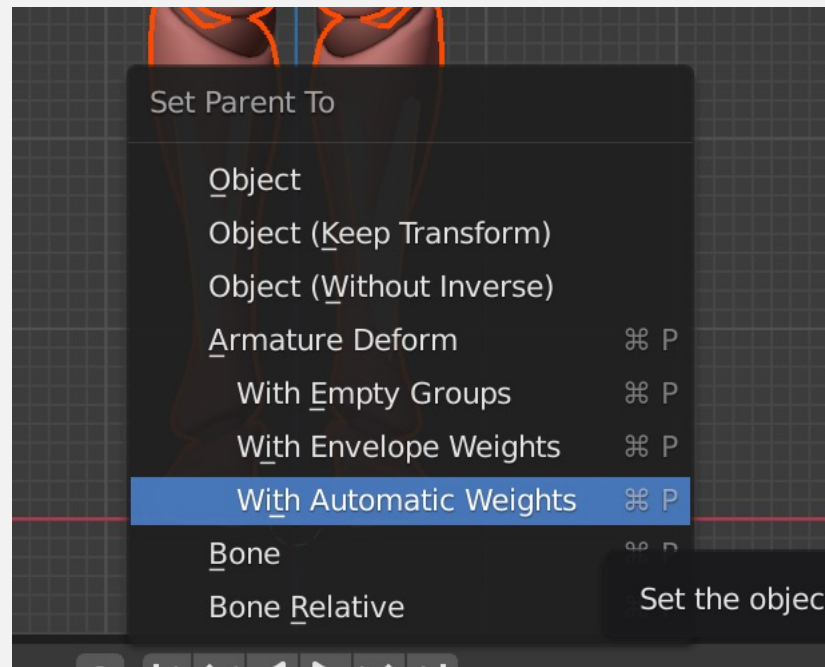
1. Press hotkey [N], now the menu appears
2. Click on “Tool”
3. Check the box X-Axis Mirror



PARENT THE MESH

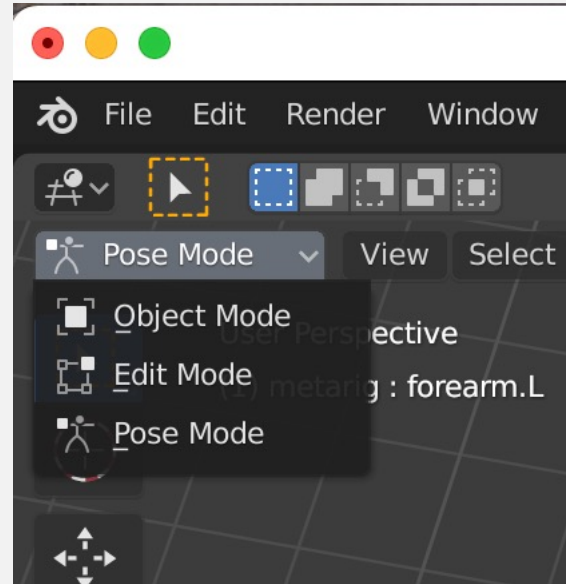
Now you can parent the avatar with the metarig:

1. Enable Solid View and switch to Object Mode
2. Click on the avatar's mesh then [shift] + click on the metarig
3. Press hotkey [ctrl][P]
4. Choose the option Armature > with automatic weights



POSE MODE

Now switch to Pose Mode

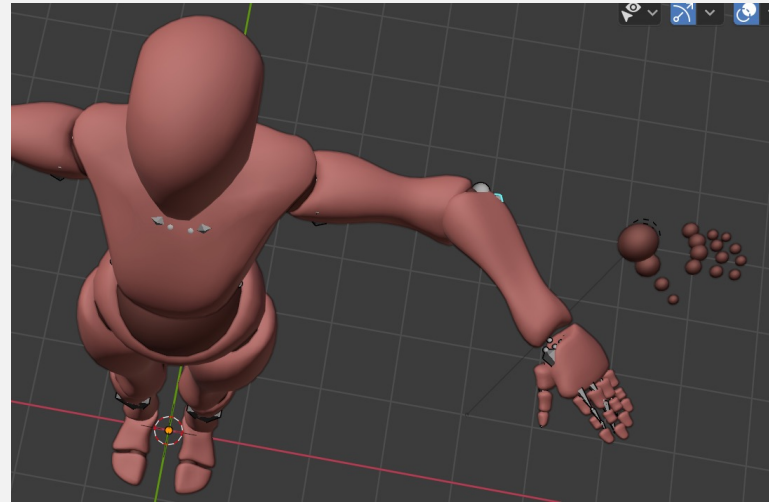


- Move a bone with [G], you will see that the avatar's mesh will follow it consequently.



REDO PARENTING

However, the mesh called Beta_Joints is still fixed



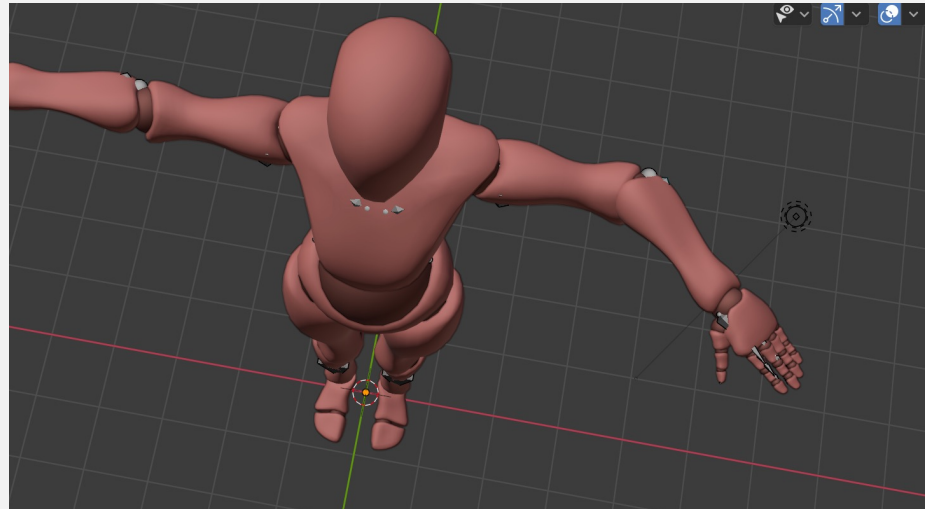
You can solve it by repeating the Steps at slide 10 “Parent the mesh” , but now instead of the avatar we will select the beta_joints part:

1. Enable Solid View and switch to Object Mode
2. Click on the beta_joints 's mesh then [shift] + click on the metarig
3. Press hotkey [ctrl][P]
4. Choose the option Armature > with automatic weights



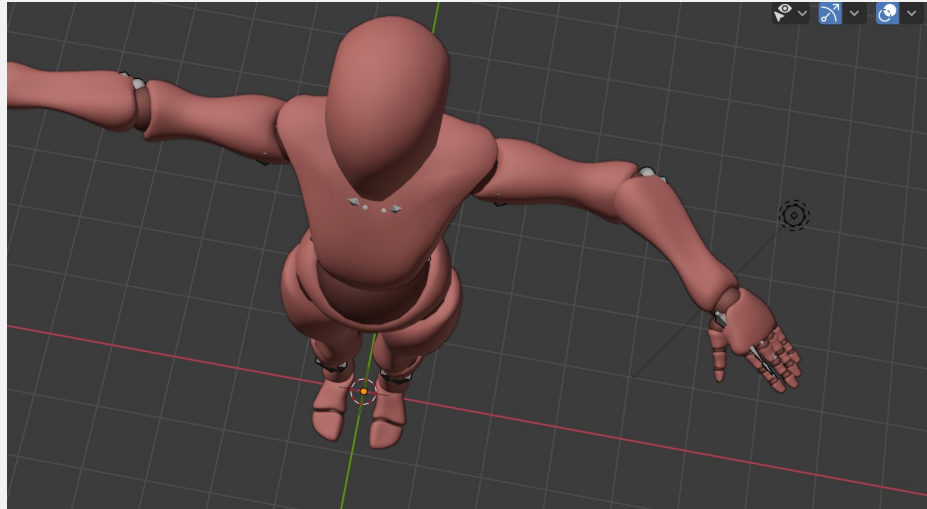
FINAL RESULT

Go back to Pose Mode, now everything will follow the bone when you move/scale/rotate it



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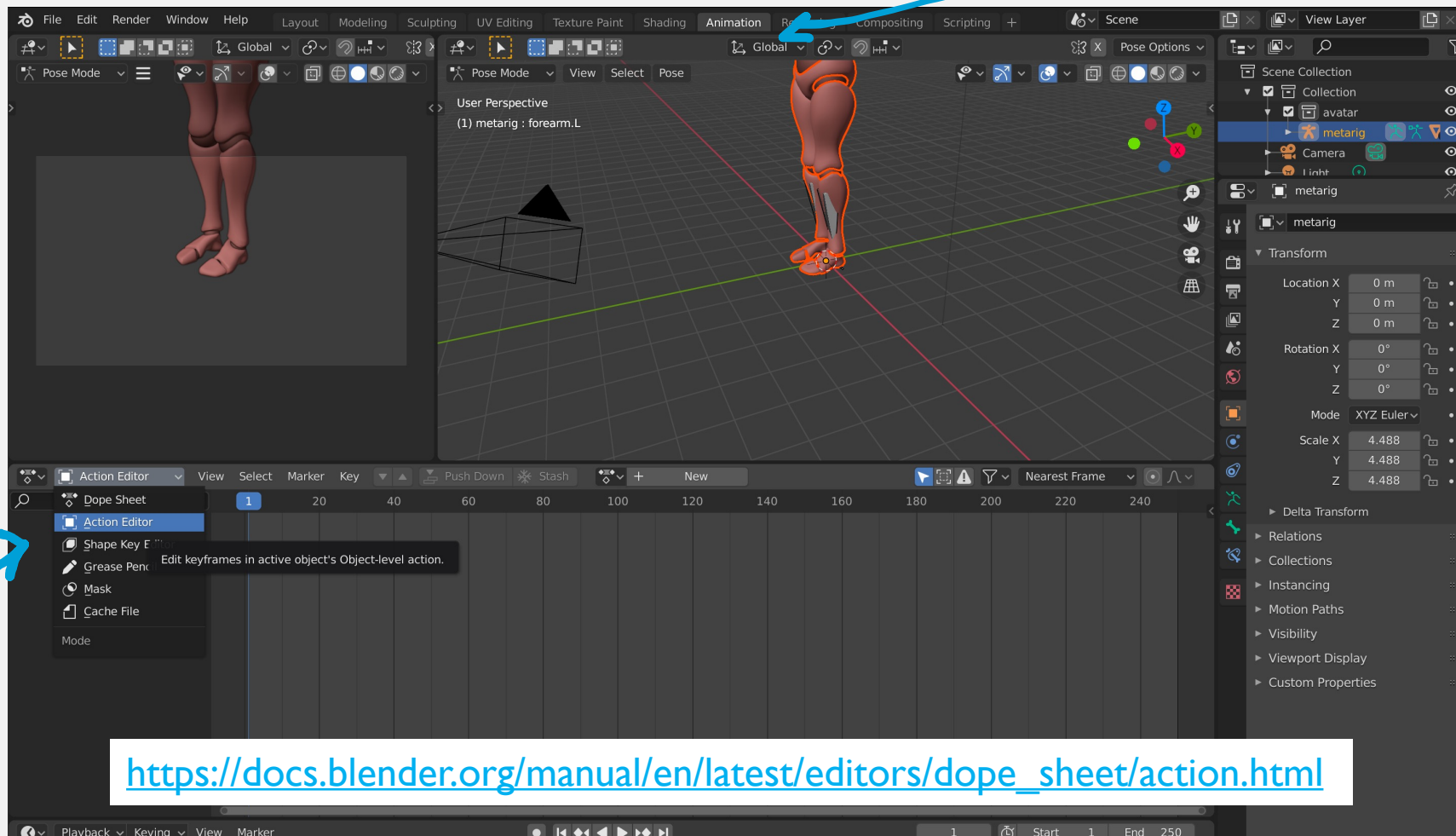
Now you can select the avatar, the beta_joints and the metarig export it as an FBX (with the option “selection only” enabled) and import it in Unity.



CREATE ANIMATIONS WITH BLENDER

You can animate the avatar in Blender and then import the animation in Unity:

1. Go to Animation tab
2. Switch from Dope Sheet to Action Editor

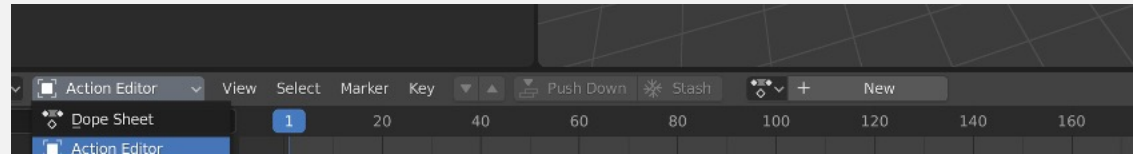


https://docs.blender.org/manual/en/latest/editors/dope_sheet/action.html

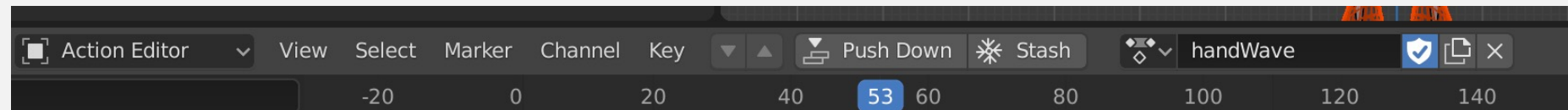


CREATE AN ACTION

A new action will be automatically generated when you will perform the step 4, otherwise, if you want to create the action before you can click on + New



When the action is created you can change the name in the text box that will appear



CREATE AN ACTION

You can create an action in the same way as an animation, we will create a Hand wave (hello sign), we will call it “handWave”

1. Switch to Pose Mode
2. Choose the timeframe (we will start with frame 1)
3. Select the hand bones, then [G] move or [S] scale or [R] rotate to adjust the hand position
4. Right click -> Add keyframe -> LocScaleRot
At this point the action will be automatically generated, otherwise, if you want to create the action you can click on + New before performing the step 4
5. Repeat steps 2 – 4 increasing the timeframe (we will increase 10 by 10)

Finally we will select the avatar, the beta_joints and the metarig and we will export it as an FBX (with the option “selection only” enabled) and import it in Unity,



IMPORT CHARACTERS AND
ANIMATIONS IN UNITY (I will use
version 2020.3)



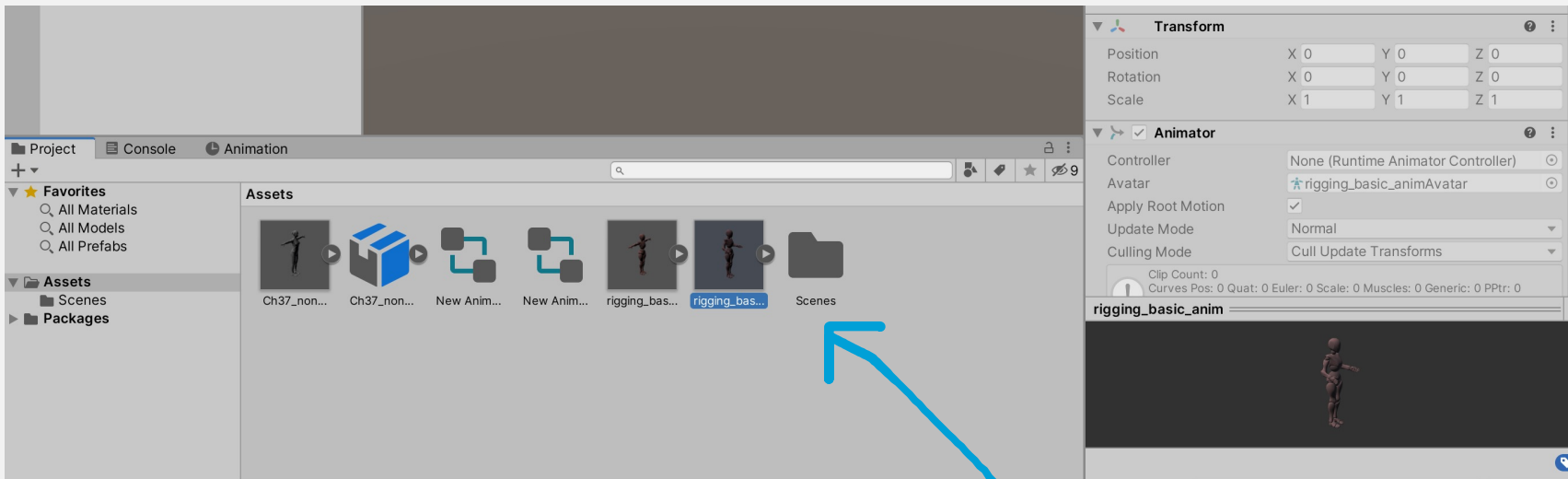
UNITY ANIMATION AND RIGGING

- A rig consists in a series of joints mimicking human bones; the character's mesh is connected to the bones (with the weight paint) and moves together with them.
- In Unity the rigged and skin properties need to be setup properly when importing an FBX character rigged with a tool as Blender or Maya.



CHARACTER'S SETUP

1. Import the FBX by dragging it into the Project Window of the Unity Project
2. Select it
3. In the Inspector panel, click on the Model tab and uncheck the Import camera and Import light (we didn't exported the camera and light in our FBX) – **optional , you can skip this step–**
4. **If you have performed the step 3 then click on “Apply” button**

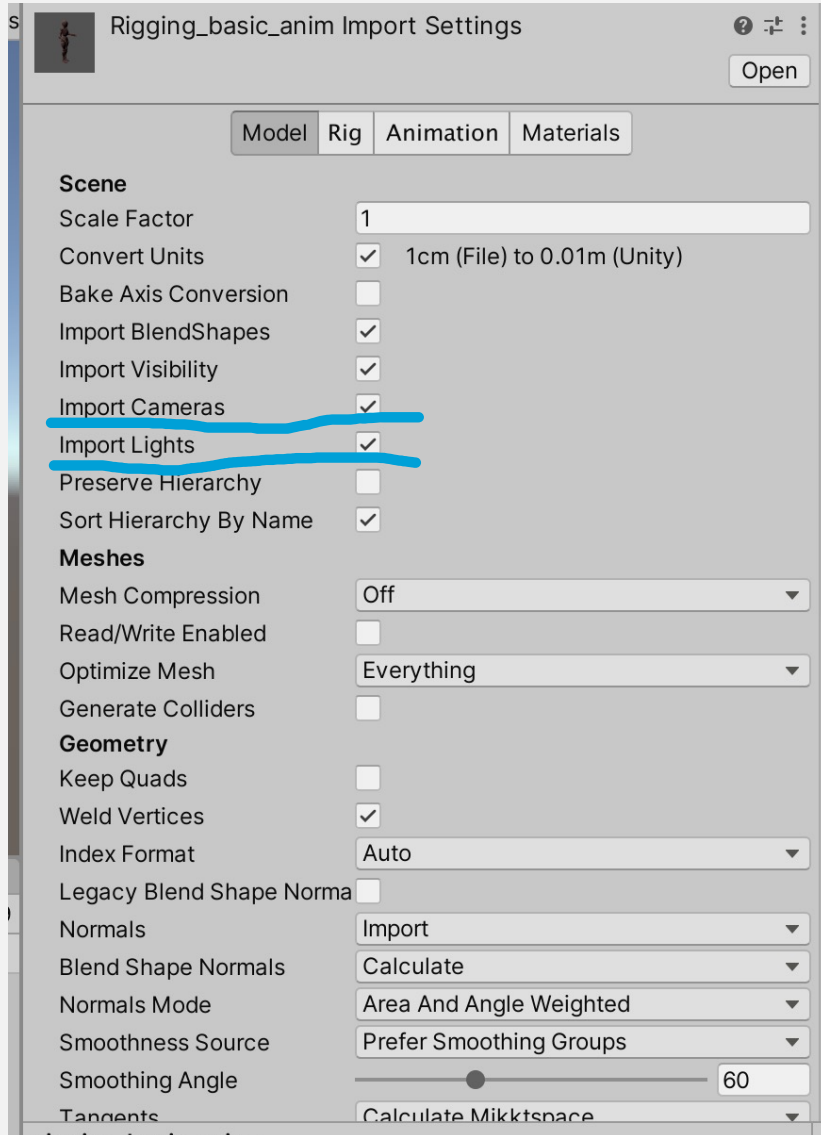


Drag here

1



OPTIONAL (STEPS 3,4)

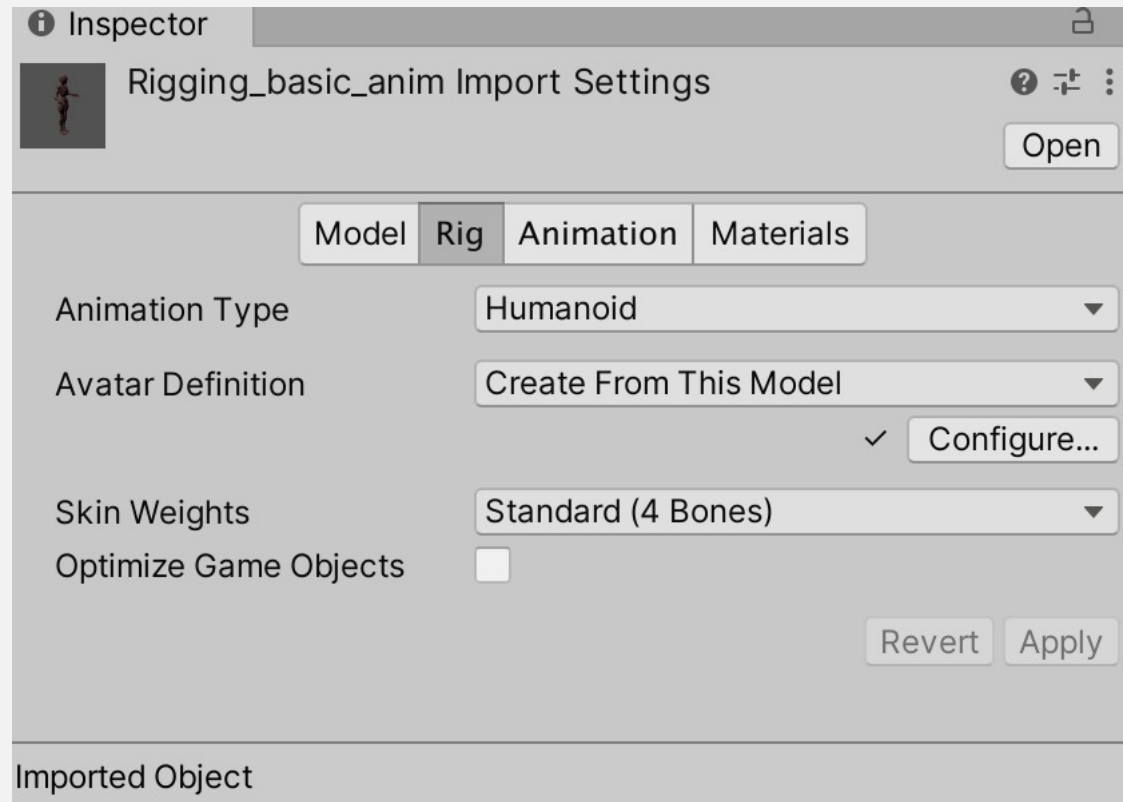


Scroll down to find the Apply button



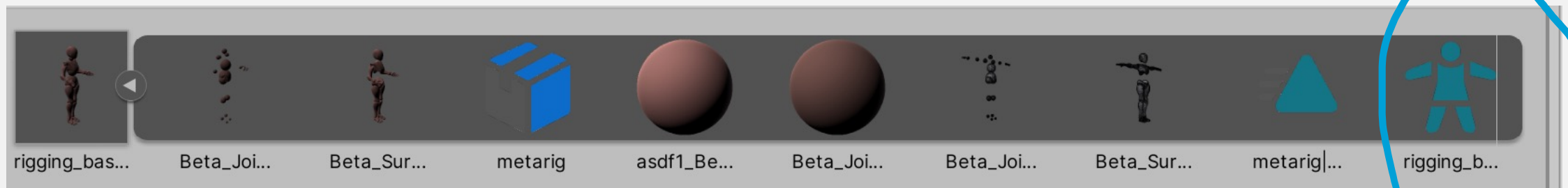
CHARACTER'S SETUP

5. Now click on Rig
6. Change the Animation Type from Legacy to Humanoid
7. Change Avatar Definition to Create from this model
8. Apply



CHARACTER'S SETUP

9. Now an "Avatar" appears in the Project Window



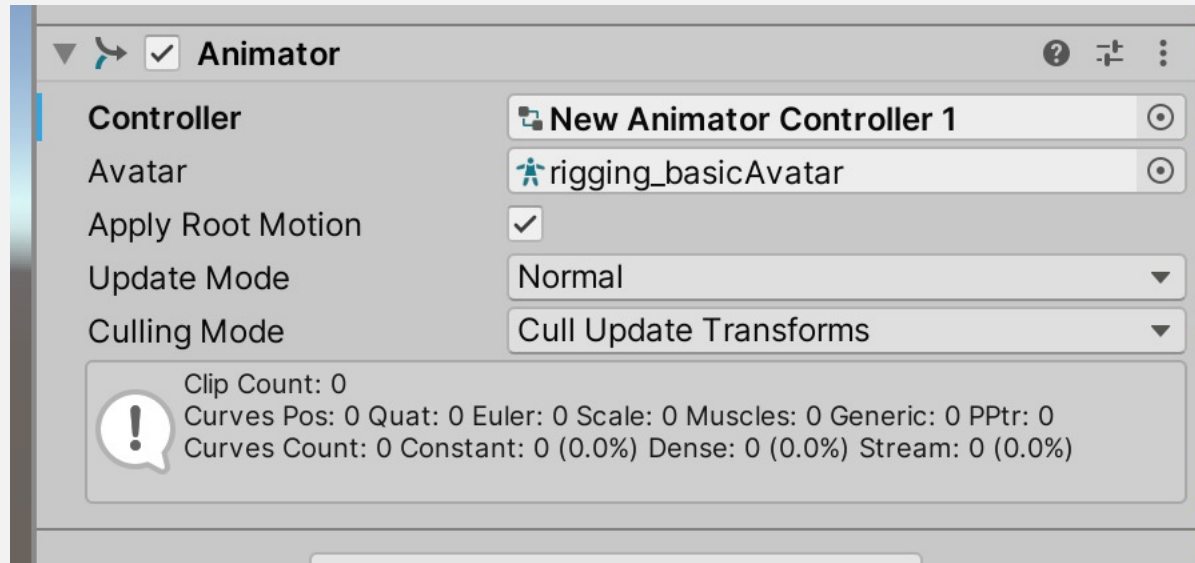
SETUP ANIMATION

- Import the FBX by dragging it into the Project Window of the Unity Project
- Select this fbx in the Project window
- Repeat all the steps from 2 to 9 (slides 20, 21 and 22)



ADD ANIMATOR

- In the Project Window right click to add a new Animator Controller
- Double click on the icon to open it
- Drag the FBX with the animation inside, it will be automatically bind as a state in the Animator Finite State Machine
- Add the animator to the avatar Game Object



PLAY IN THE EDITOR

- Now you can play and check the results!

