

Motion Builder Basic Rigging: Constraints – V1

by Deborah R. Fowler and Jennifer McSpadden

In Maya:

****Make sure you are in the “Animation” menu context.**

Rigging Using Constraints

1. In Maya, ensure that the fbx plug in is loaded (Windows/SettingsPreferences/Plug-in Manager)



2. Import your character mesh as an obj file

TIP: Remember ALT to move in the camera and w-translate e-rotate r-scale

3. Import your fbx rig (you may wish to build your own, but for the purposes of this demo we will be using one of two rigs that are available to you in the dropbox:

bone_skeleton.FBX – it is located on your home computer in

C:\Program Files\Autodesk\MotionBuilder 2013\tutorials or

SkeletonFromMB2012 - it is located on your home computer in
C:\Autodesk\Autodesk_MotionBuilder_2012_English_Win_64bit\Content\ClipArt

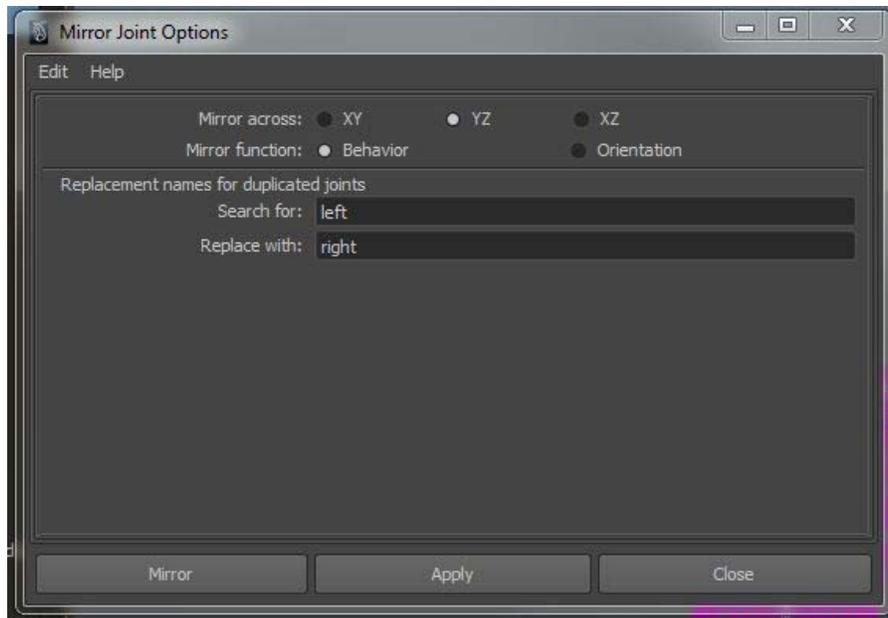
JaySkeleton.fbx - a rig from Animation Alumni Jay Munday

These are excellent starting points. Note the postfix “FromMB20XX” is for dropbox ease of identification. On your home computer it is bone_skeleton and Skeleton (formerly called skeleton75 in previous versions).

It is very important to follow **motion builder naming conventions**. The above are excellent examples.

4. Align your rig with the model. In the video we have used a model of a Gladiator built by VSFX Alumni Trent Stroud. It is highly recommended that you select a more stylized character that will be less scrutinized for identifiable human movement for which we are highly aware and critical if not perfect.

Tip: When aligning your rig, if your character is symmetric, delete the one side, then select **Skeleton/Mirror Joint**. In the dialog box, change Mirror across to **YZ**, and designate which joints to mirror, left for right, or right for left.



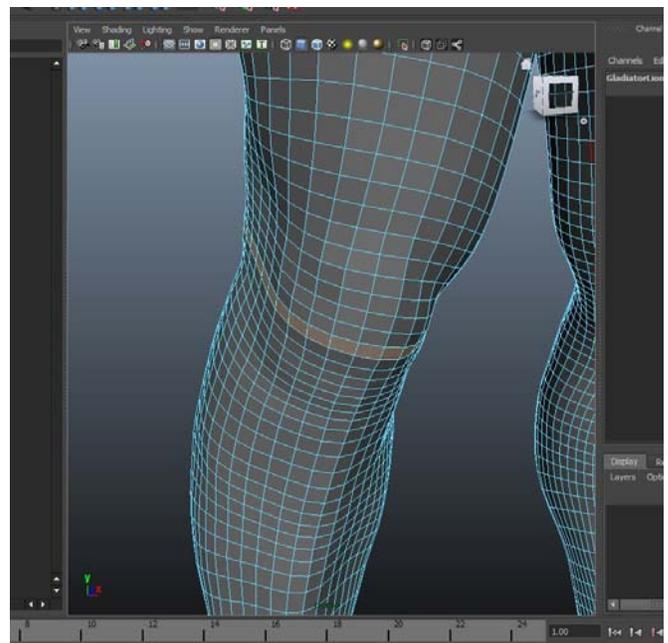
5. Next, you need to constrain portions of your mesh to each of the joints in your rig. As mentioned before, this process is best used with a stylized character, such as a character made of primitives, a skeleton, or one where the body parts are unattached from each other.

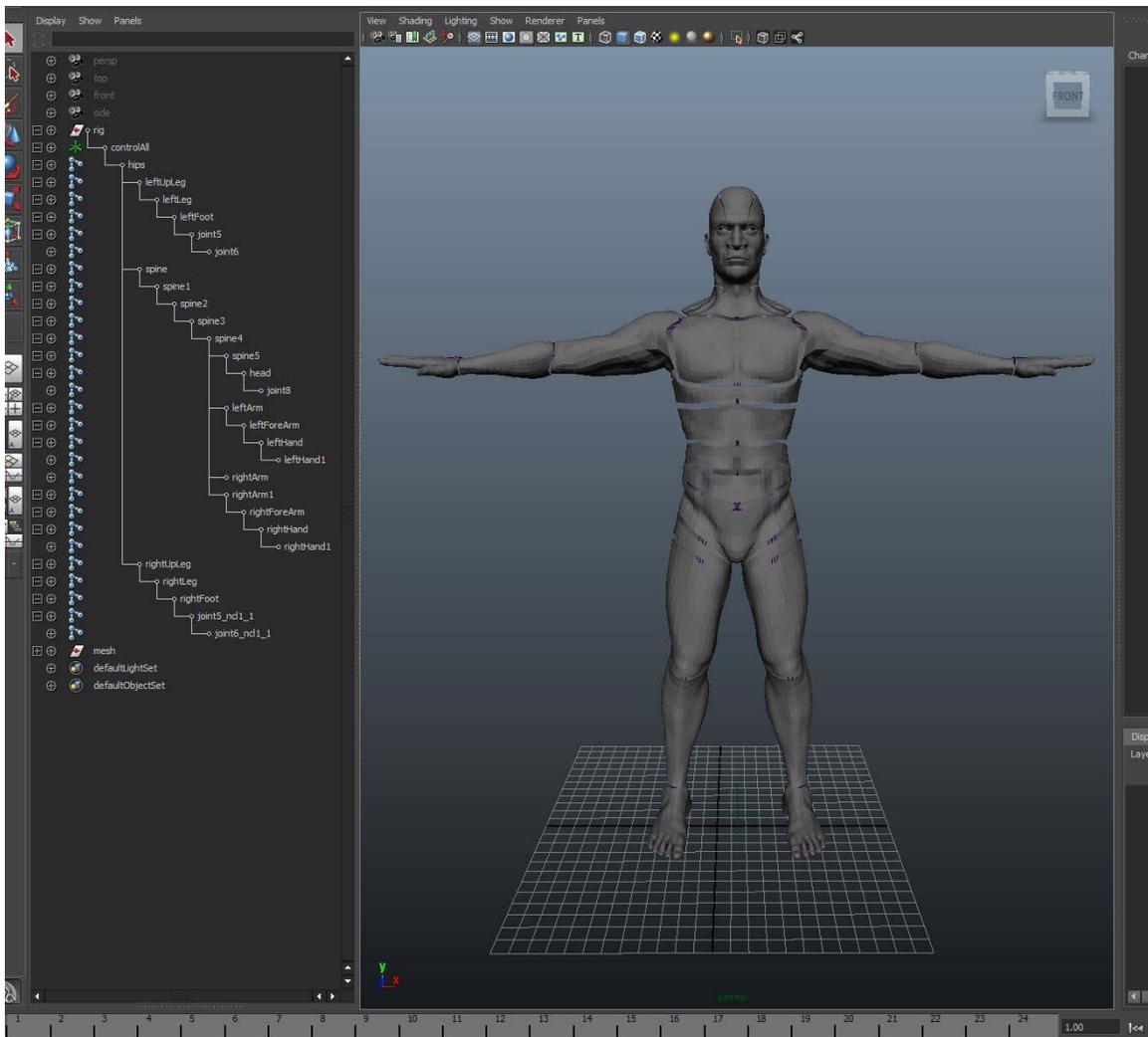
Depending on your kind of character, do **one** of the two following steps.

- a. If your character is a made of primitives, bones, or if the geometry is already segmented, then you will be able to continue to the next step right away.
- b. If your character is a single mesh, right click and hold on your mesh and select **Multi**. You should be able to select individual faces on your mesh. Select and delete face “loops” that correspond to the location of the joints on your rig.

To do this, select a face on your mesh, and then shift click the face next to it in the direction of your intended loop.

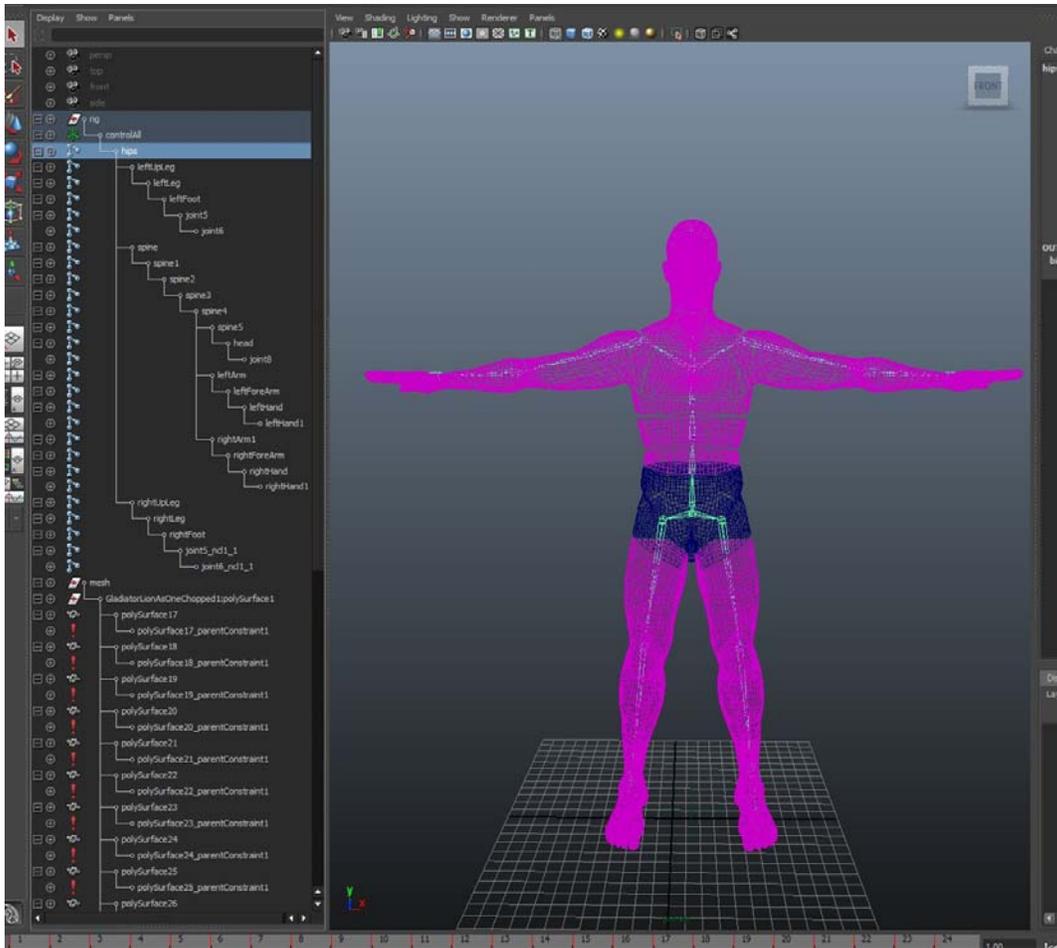
Depending on the topology of the mesh you are using, you may need to individually select the faces you wish to delete. Continue this process until all of your character is in pieces.





- Next, select a joint on your skeleton, and then shift select the piece of mesh you wish to constrain to it. With these selected, go to **Constrain/Parent**. You will then be able to move or rotate the joint, and the mesh that you constrained to it will move with.

Do this for all of the joints in your skeleton. You can tell that a piece of geometry is constrained in two ways. When you select a joint, the corresponding mesh will highlight pink. Also, in the Outliner, there will be a constraint entry, preceded with a red exclamation point, that points to the joint it is constrained to. (Deleting this entry will undo a constraint, which makes fixing mistakes easy.)



NOTE: You can constrain more than one piece of mesh to a single joint.

NOTE: Do not constrain anything to your hip joint. Additionally, it is okay to leave your hip mesh unconstrained. Due to the nature of the skeleton, the hip area will move accordingly while unconstrained.

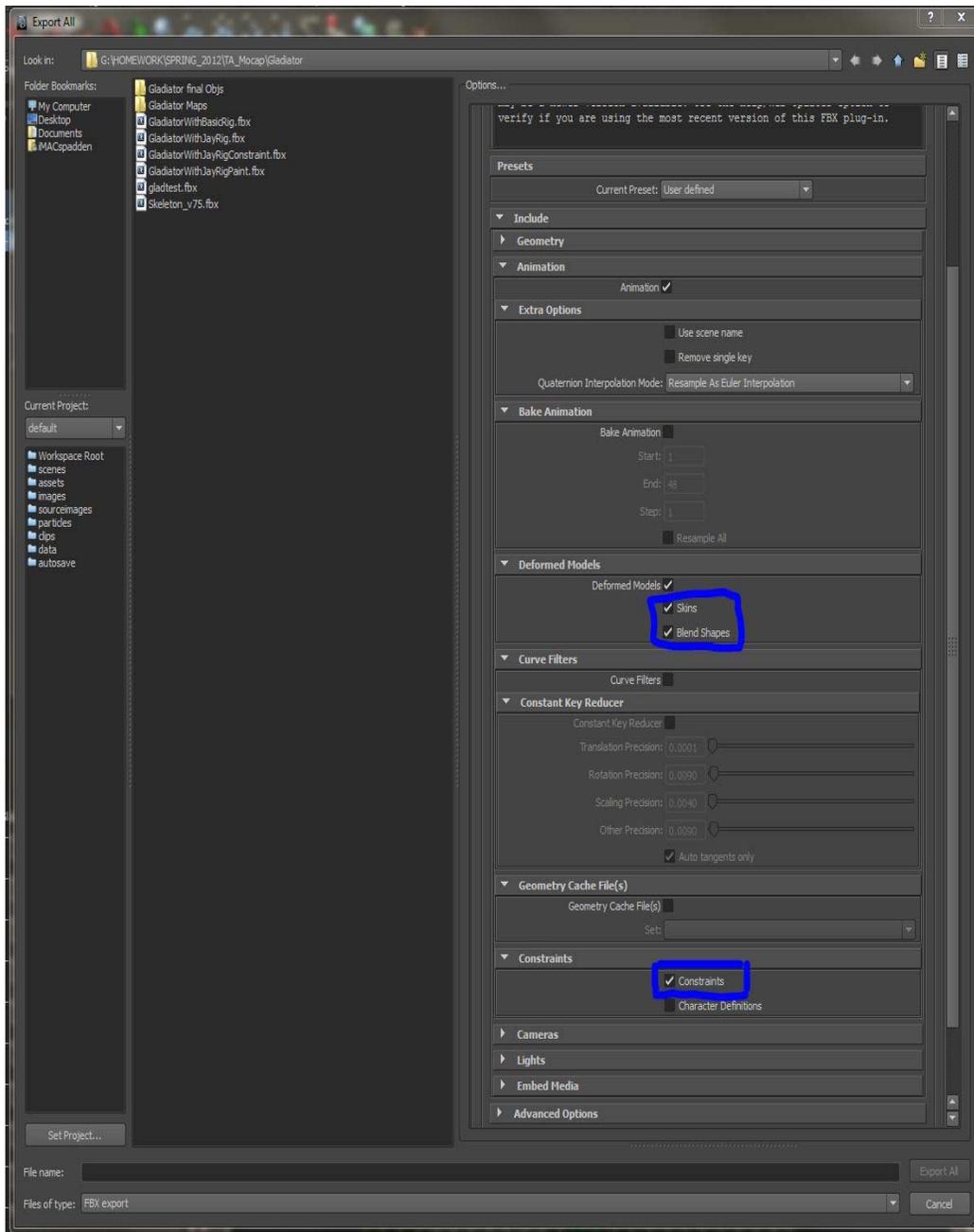
7. In Maya, bring up the outliner. You will see the rig (hips or a control reference) and the mesh.

You can expand the rig in the outliner (use **shift when hitting the plus symbol** to speed this up) or you can use **select hierarchy** to ensure the rig is selected.

8. Next **skin** your mesh. Under **Skin/Bind Skin/Rigid Bind**.

The default settings under the option box are fine here.

9. **Finally, export your rigged character as an fbx.** (Ensure in the options box that **skin/blends and constraints** are checked. These are found under Deformed Models and Constraints in the export dialog box).



Alternatively, in Houdini: (documentation coming soon)

Next, In Motion Builder:

1. **Open** your exported rigged character fbx file using **File/Open**.

You can test your rig at this stage by rotating or moving a joint, just to make sure everything exported okay from Maya.

2. **Characterize** your model - by dragging the character icon to the “hips”

(select **Biped**)

3. **Merge** in your captured, cleaned up fbx motion skeleton and characterize

(for example, LAMAR_ROM_CLEANED.fbx is an example in the dropbox).

4. **Characterize** your motion capture data.

(select **Biped**)

You now have motion on something that is not one of the tutorial characters!