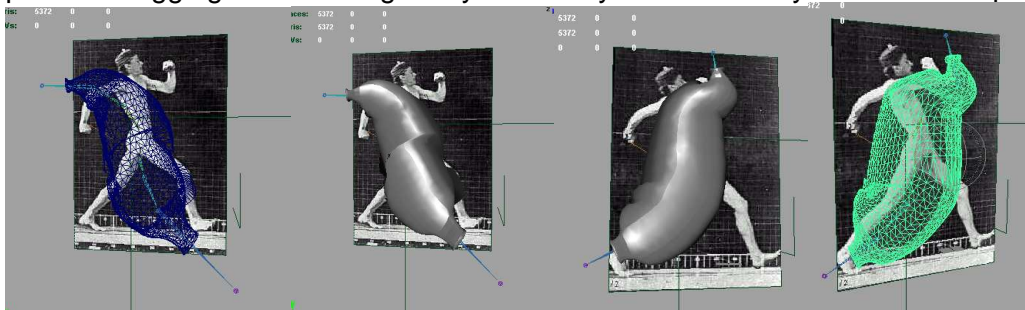


Animating a bag according to Muybridge

JMG - Spring 2007

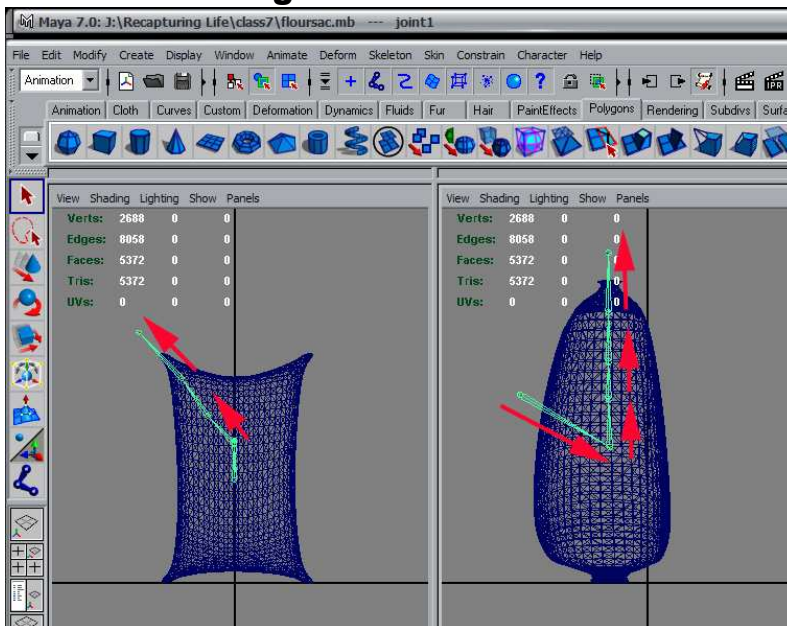
The goal of this tutorial is to setup and test a character animation walk cycle using forward kinematics. We will test the deformations and tune up the character animation process - rigging and skinning - so you be very creative with your animation process.



Animation of a bag following Muybridge photographs of a man walking.

Thanks to [Muybridge](#) (1830-1904) and to [George Maestri](#) for covering how to animate non-human characters, for example a flour bag, in Digital Character Animation 1 and 2.

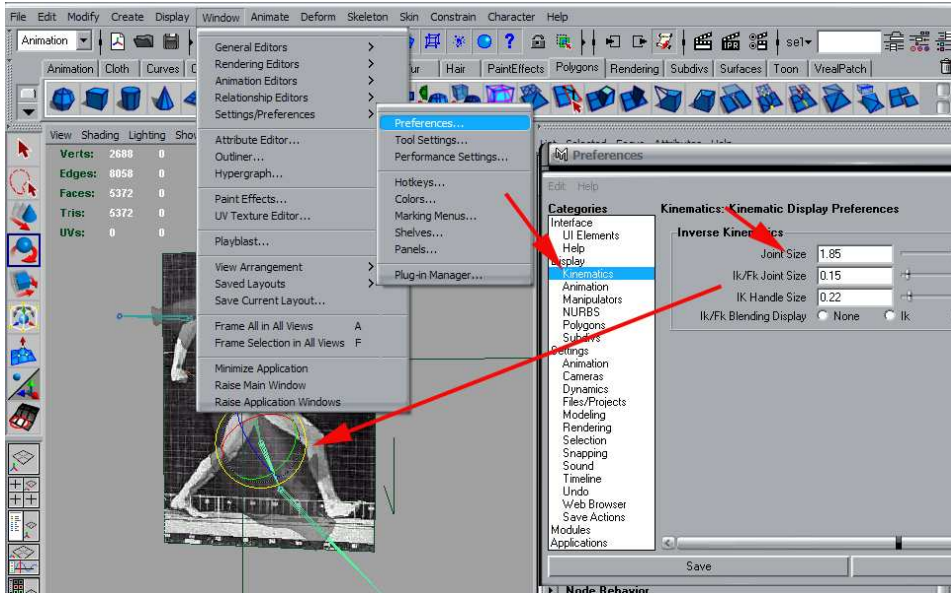
Part 1 - Skinning



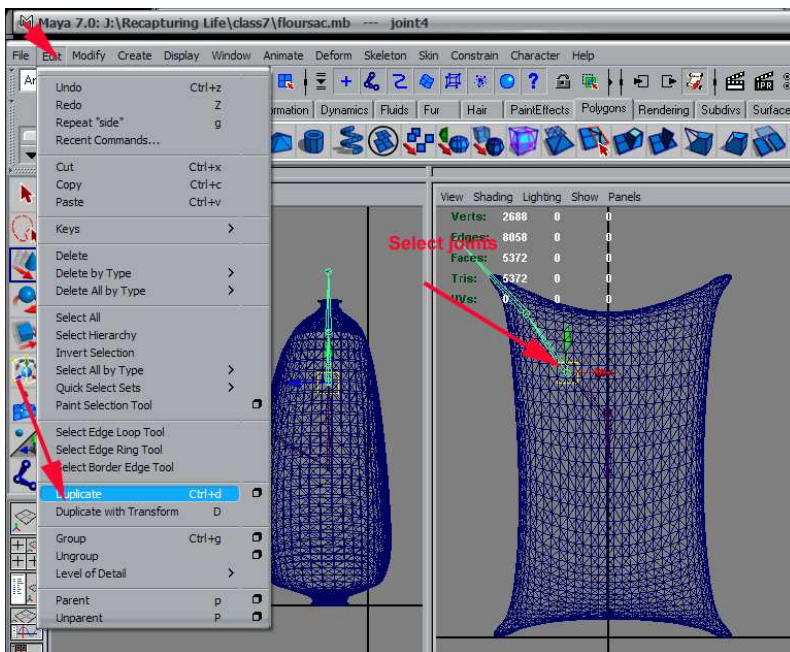
Let's add joints to a 3D object. This bag was created using Subdivision surfaces. IMPORTANT note that if you are using a Subdivision Surface, RMB on the 3D object and select Standard in the contextual menu. Using the Polygons Proxy mode may create unwanted polygons during the skinning process.

Drawing joints inside the 3D object. Go to animation > Skeleton > Joints Tool. Start with creating a point outside the 3D object. LMB. Move to the center of the 3D object, LMB > a joint (green) is created between the two points. Please note that the Shading > Xray node is convenient to see through the 3D object.

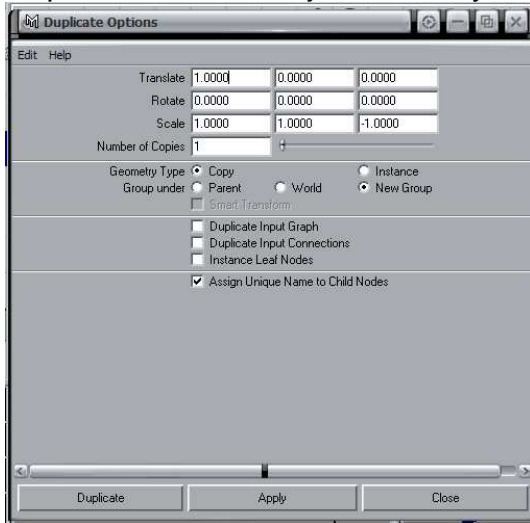
IMPORTANT note: You may need to resize the joints. If the joints are too big or too small for your character.



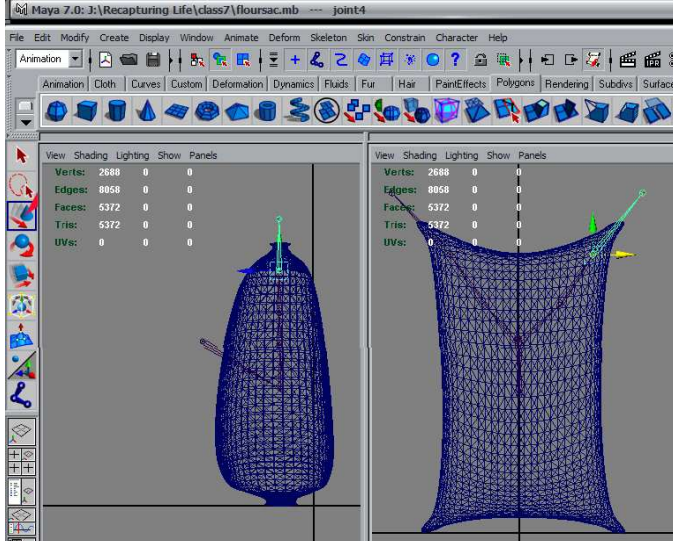
Go to Windows > Preferences > Kinematics > Joint Size.



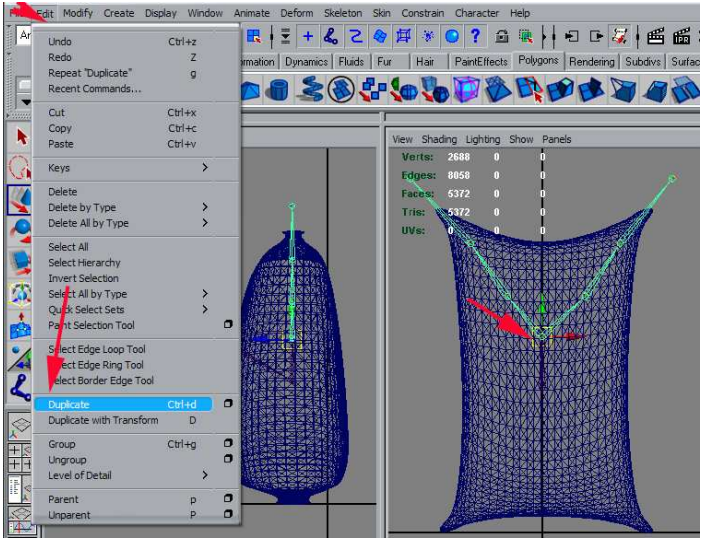
Let's Duplicate the other side. Select the chain of joints to duplicate, go to Edit > Duplicate. Select the joints one by one and move to the other side.



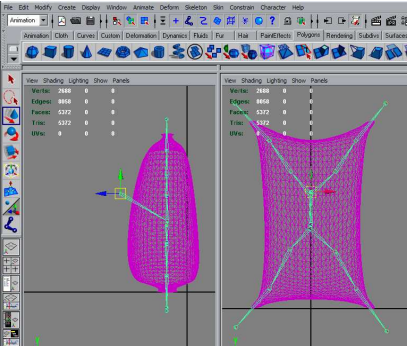
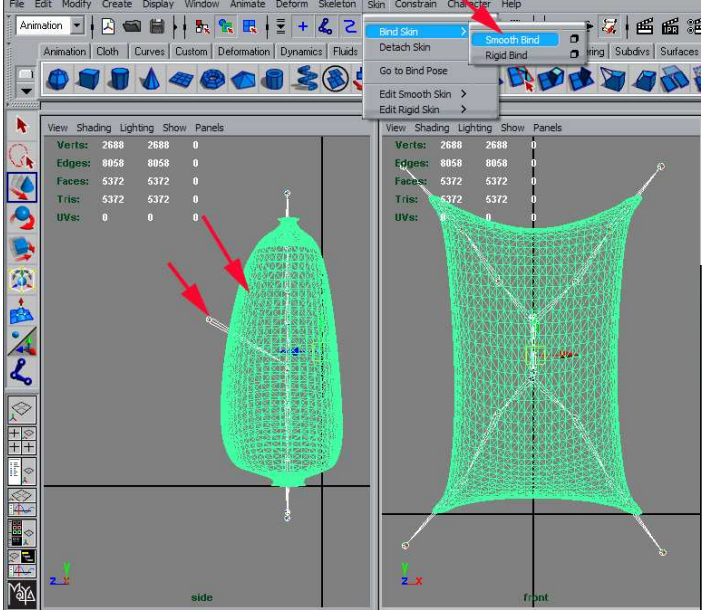
In this case the Duplicate options copy a New Group



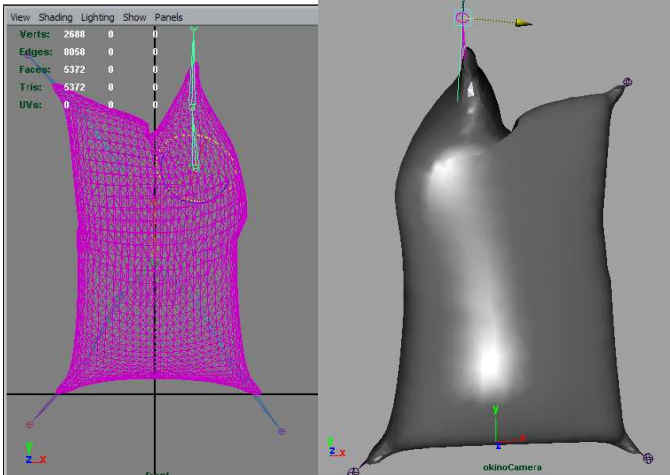
You have two branches that are connected together. Please note, if the branches are not connected. Select the non-connected branch, the children, SHIFT select the joint where the connection needs to be, the parent, Press "P". An additional joint is created between the parent joint and the children.



Repeat the same step for the “legs” of the object



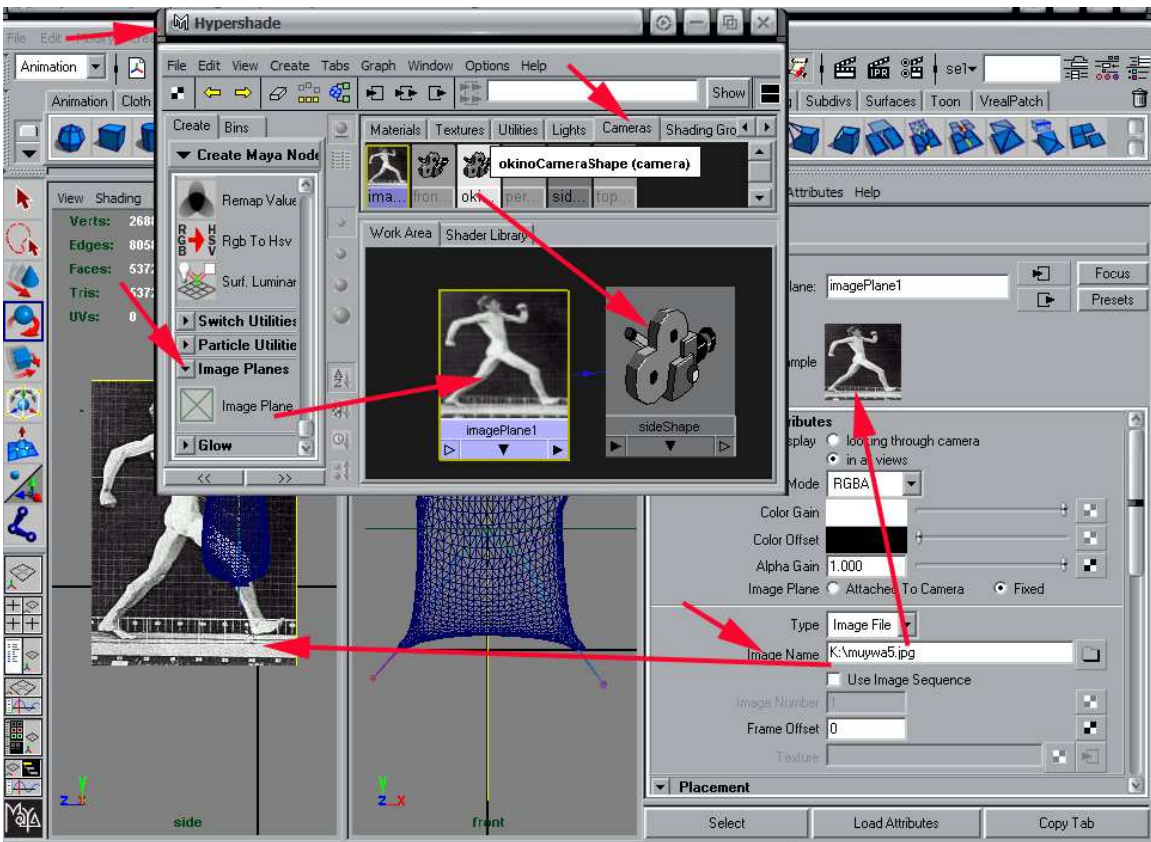
Let's bind the joints and the mesh together. Step 1 select the joints, step 2 select the mesh. Step 3 Go to Animation > Skin > Smooth Bind.



Test your binding setup by selecting and rotating a joint.

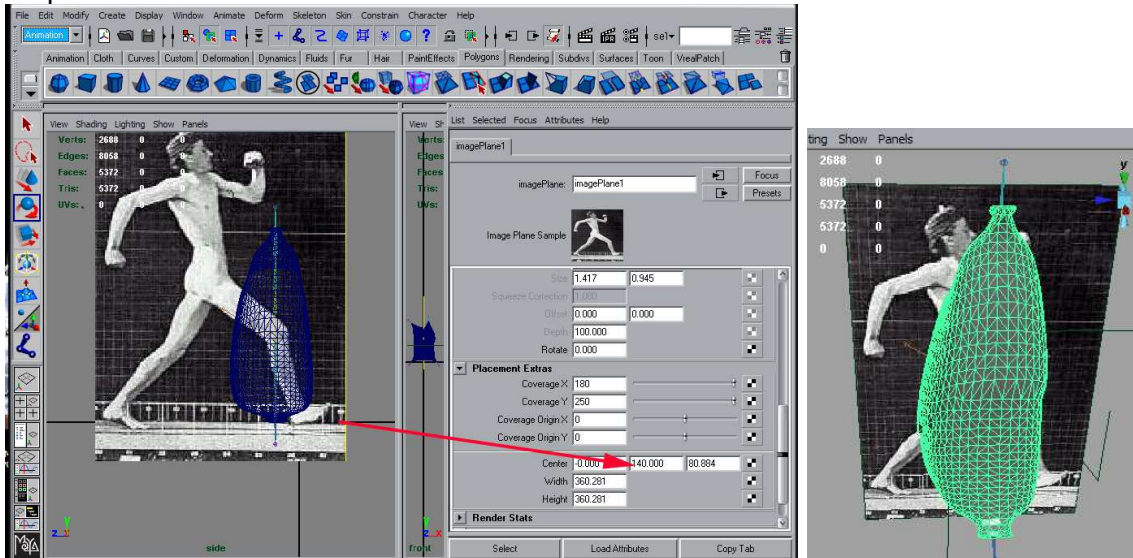
IMPORTANT note: Select joint 1- green color, the purple color of the mesh indicated that the mesh is totally controlled by the joints. Please note that you can't remodel or change the mesh at this point.

In the case you want to continue modeling. Select the joints – for example LMB on the first joint - and SHIFT select the mesh, go to Animation > Skin > Detach Skin. You can Smooth Bind again the skin later.



Let's upload a template, an Image Plane from Muybridge. Go to Windows . Hypershade > Select Cameras. MMB and drag in the Work Area. In Create Maya Node, scroll all the way down , select Image Plane, MMB drag on the Camera icon inside the Work Area. Select Default in order to connect the icon. LMB on the Image Plane icon, go to the

Attribute Editor and upload the template image. Please note that you can use an Image sequence.

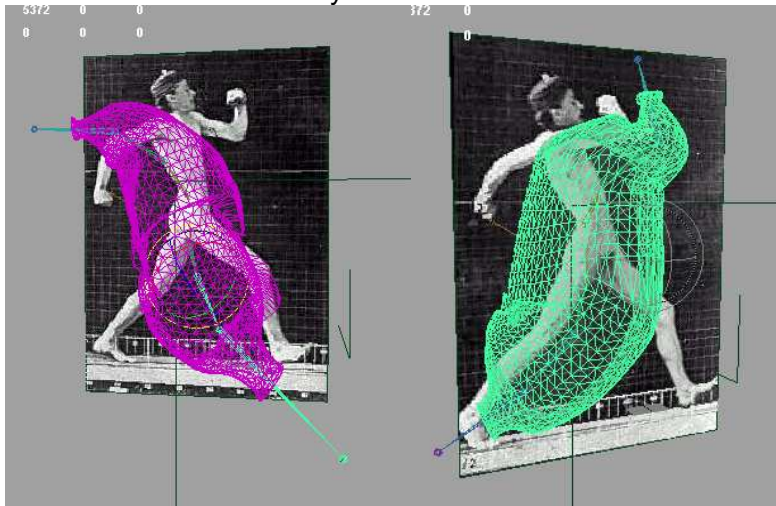


Matching the 3D model and the template. In the Attribute Editor for Image Plane, “Placement Extras” lets you move and resize the Image Plane according to the 3D object.

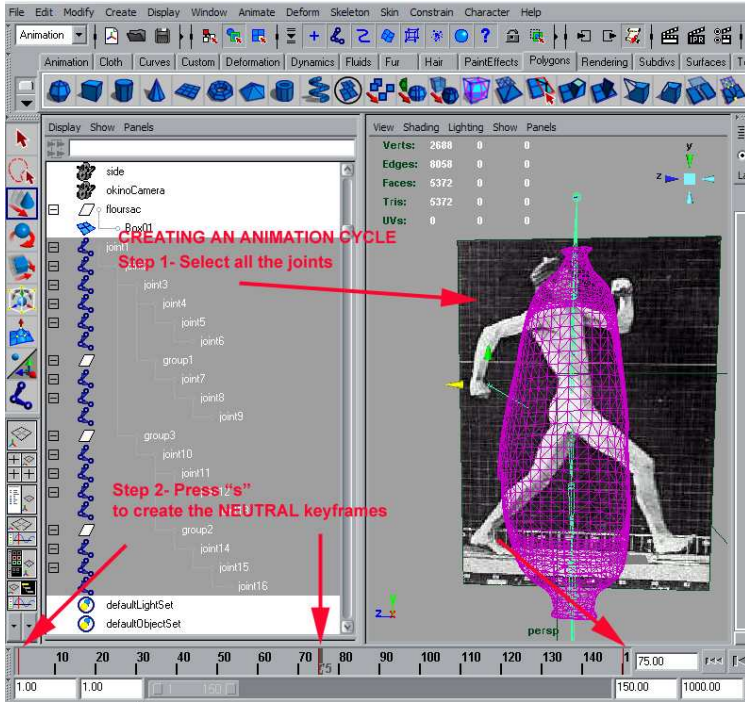
Part 2- Animating

Let’s animate a 300 frames walk cycle using with several frames from Muybridge as templates.

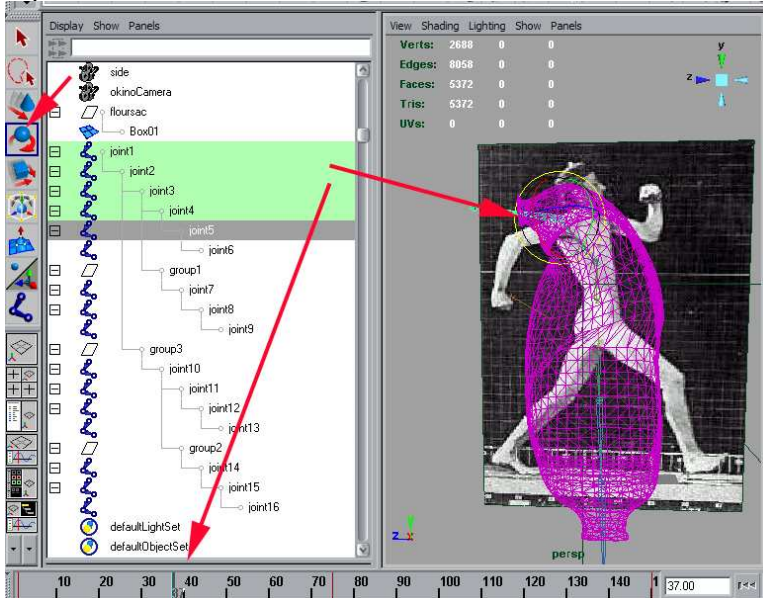
IMPORTANT note: save your scene in an archive folder before you start animating.



We will use at least two templates from Muybridge. On the left side, from frame 0 to 150 and on the right side from frame 151 to 300. Before creating any animation, let’s create NEUTRAL keyframes at 0, 150 and 300.



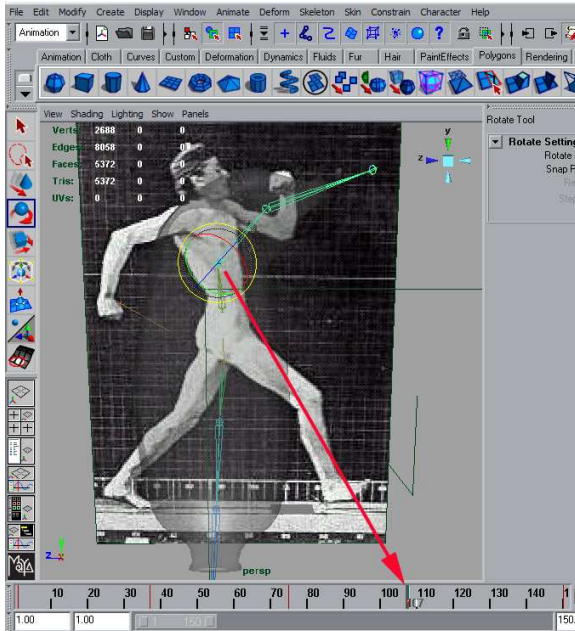
In Outliner, select ALL the joints, set the timeline at 0, create a keyframe – press “S”, repeat at 150 and 300.



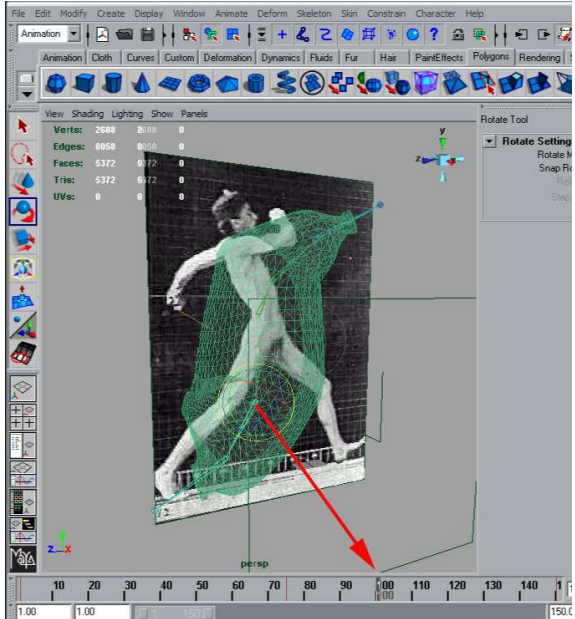
Let’s animate. Please keep in mind that the rotate and scale tool are strongly suggested. Using translate inside a mesh ay create strange results.

IMPORTANT note: You may need to resize the Rotation manipulator. If the manipulator is too big for your character or if you can’t select joints located inside the manipulator. Go to Windows > Setting Preferences > Preferences > Manipulators, Global Scale and change the size of the manipulator.

Start working on the upper part of the 3D object. Go to frame 75. Let's create a deformation. Create a keyframe.



Go to frame 175. Let's create a deformation. Create a keyframe.

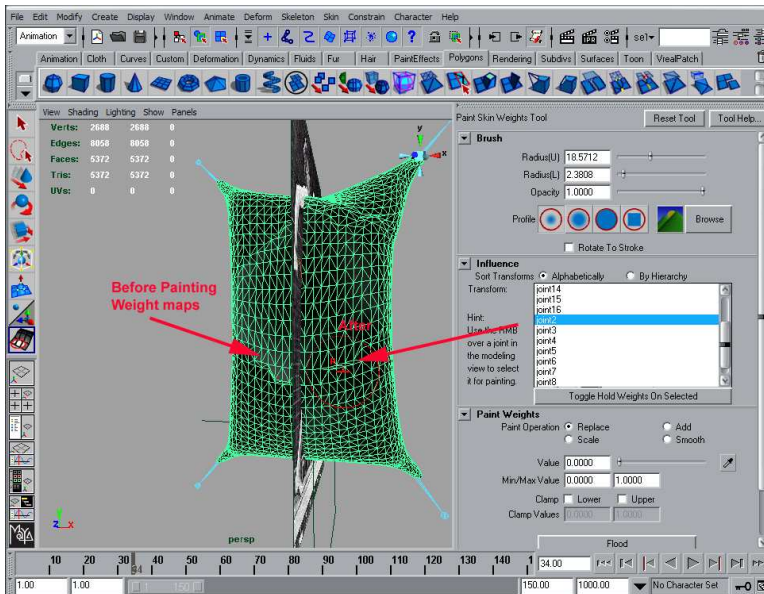
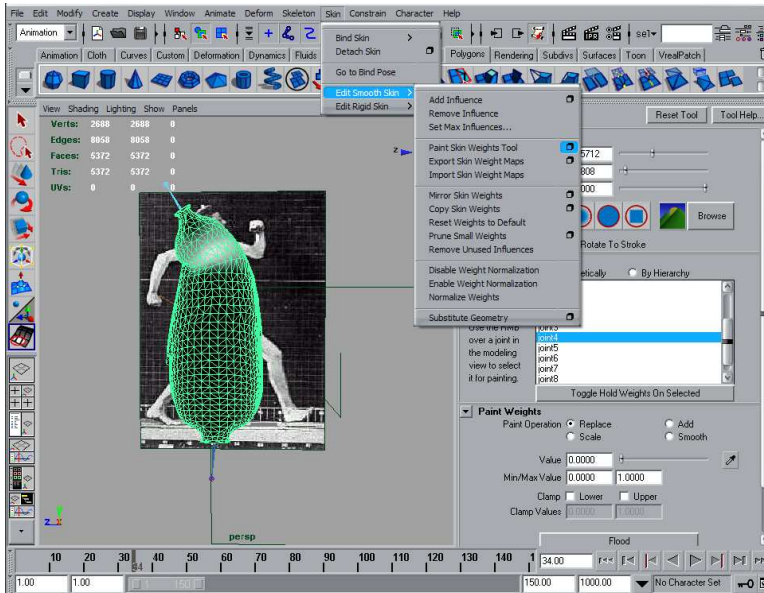


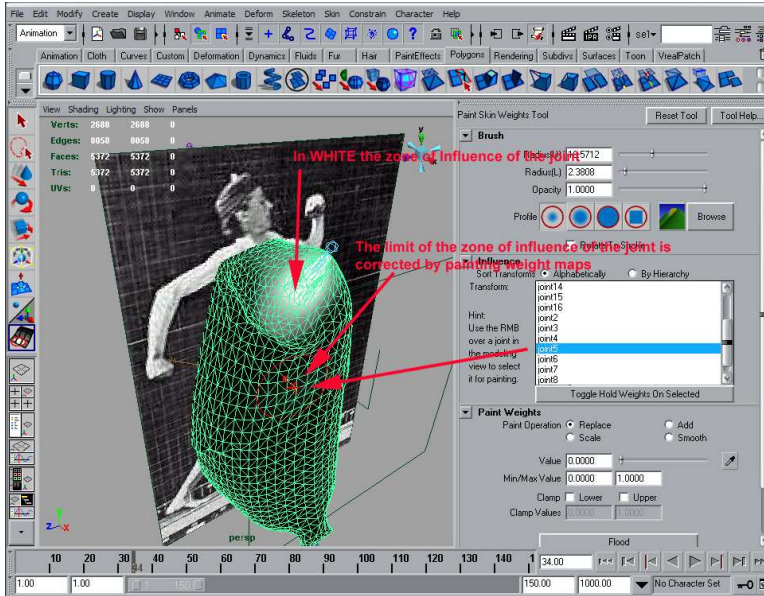
Let's flow the motion between the upper part and the lower part.

As you animate, you may notice that the mesh needs more fluidity, some resistance inside the mesh make it look breakable. This comes from conflicts that can take place between several joints attracting similar areas of the mesh. You can paint the zones of attraction – shown in white - for each joint in order to smoothen the mesh.

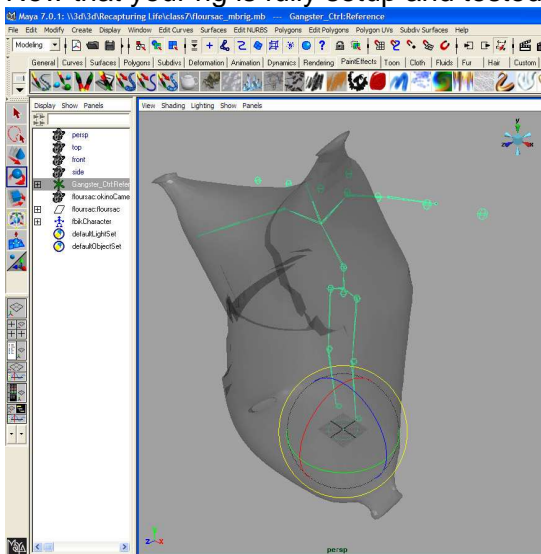
Select the mesh. Go to Animation > Skin > Edit Smooth Skin > Paint Skin Weights Tool, select the square.

In the Paint Skin Weights Tool, you can select a joint, visualize the zone of attraction in white and paint in white = more attraction will stretch the mesh or in black = less attraction will relax the mesh.





Now that your rig is fully setup and tested, you are ready to take your animation very far.



The next tutorial will show how to merge your character with an animated rig.