

CIS 561/461: 3D Modeling and Animation Applications

06.15.05: Maya to Motion Builder to Maya using Motion Capture Data

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I. Model preparation in Maya:

1. Make sure the .fbx plug-in is loaded
 - a. Go to Window/"Settings/Preferences"/Plug-in Manager.../
 - b. Then scroll down until you see an 'fbx...' plug-in and check the box for load
2. Model should be forward facing in the Z-axis
3. Windows/"Settings/Preferences"/Preferences.../ click on Settings on left
 - a. Make sure "Linear" is set to centimeter (units in Motion Builder are cm)
4. Scale model larger (6' is about 182cm)
5. Make a skeleton using the default Motion Builder naming conventions
 - b. (this will save you time later)
6. The minimum required joints and their names are:
 - a. Hips
 - b. LeftUpLeg
 - c. LeftLeg
 - d. LeftFoot
 - e. RightUpLeg
 - f. RightLeg
 - g. RightFoot
 - h. Spine
 - i. LeftArm
 - j. LeftForeArm
 - k. LeftHand
 - l. RightArm
 - m. RightForeArm
 - n. RightHand
 - o. Head
7. You must rig your character using a rigid or smooth bind from the skeleton to the character mesh and painted weights (as demonstrated in class). Any additional rigging techniques will not export. (i.e... IK, influences objects, flexors, etc...)
8. File/Export All/... and export the character as a ".fbx" file
9. You are well on your way! Open Motion Builder!

II. Bringing Motion Capture Data in Motion Builder:

1. File/Custom/Import/ReActor (EMF) Import/
 - a. Import a motion Capture file with a T-pose
2. Scroll along the timeline within the Transport Controls window until you can see the T-pose motion capture data in the Viewer window
3. Select all the motion capture data markers and the root (the ball) and create a new group by going to the Asset Browser window and clicking the groups tab. (If you do not see a groups tab go to Layout/ and select Creation)

4. You may want to rename this group by double-clicking the name and entering a new one. You may hide this group by un-checking the show box.
5. In the Asset Browser window go to the Templates tab and click character and then drag the actor icon onto the viewer stage
6. To navigate within the stage in the viewer window you may pan with shift+LMB, zoom in and out with ctrl+LMB and rotate around the focus with shift+ctrl+LMB
7. Select the actor's pelvis (the root) and drag him to where the motion capture data exists. Resize and rotate the actor to fit the data (not vice-versa)
 - a. The hot keys for translate, rotate and scale are t, r and s respectively (makes no sense, we know...) You double-click things to select and deselect objects
8. In the Navigator window double-click on the actor Click on marker-set and click on create
9. In the Actor Controls window go to the 'show' menu and uncheck Actor Body and Actor Skeleton to hide the geometry
10. Select groups of motion capture markers and hold alt and drag them to the appropriate circles on the actor in the Actor Settings section of Navigator window (for instance, drag the three markers for the hand and wrist to the wrist circle with a zero in it and it will change to 3)
11. When this is done for all the markers, check 'Active' and then show the Actor body again (Actor Controls window) and the actor should fit the animation if you drag along the timeline or hit play
12. Now go to the "Marker Set..." button within the Actor Settings section of the Navigator window and hit export and save them (this is if you want to use this marker set from the t-pose motion capture on another motion captured animation). It might be a good idea to start a new file after this

III. Mapping Motion Capture Data in Motion Builder to a Character from Maya:

1. Open your rigged Maya character in Motion Builder
 - a. In the viewer go to Display and choose X-ray mode
2. In the Asset Browser go to Templates/Characters and drag the character icon onto the skeleton of the model in the viewer (make sure you are dragging it onto the skeleton, not the mesh) and then choose characterize from the pop up menu
3. If you have properly used the naming conventions from Motion Builder it will ask you whether your character is a biped or quadruped. Choose the appropriate option
 - a. (You will only need this part if you have named your joints with Motion Builder's naming conventions) Within the Navigator window under the characters heading select the character. In the character definition tab, scroll down until you see 'Base (required)' and expand it. For each of the required joints under model, if they are not gray you will need to hold alt and drag the appropriate joint to the corresponding box under model.
 - b. Next check the box for characterize
4. You can choose to add a control rig now by pushing the create button under the words Control Rig. You can choose the option that best fits for you. Here we suggest FK/IK

- a. We also suggest selecting the skeleton and character mesh and creating a group so as to allow you to hide or show it at will
5. Drag an actor onto the stage from Asset Browser/Templates/Characters and then go to Actors/Actor and within the Actor Settings tab click the Marker Set... button and choose import to choose your earlier saved marker set
6. To import a motion capture (you just need to do this one at a time) go to File/Custom/Import/ReActor (EMF) Import
7. Select the newly imported motion capture data, including the root or ball (drag a selection box around the motion capture markers and then ctrl-click the ball) and now hold alt and drag the selection from the stage to the Actor Settings section of the navigator window to the box where it says 'no model' under Model next to 'Reference'
9. Check active and play the new animation on the Actor (note that it is not yet applied to your character from Maya)
10. Make sure you show your character if hidden, and then go to Navigator/Characters/Character and under the Character Settings tab change the Input Type to Actor Input instead of your control rig (if that is the current input)
 - a. In the Character Controls window you may want to hide your Actor so as to see the motion capture data applied only to your Maya character
 - b. Save your work!!!

IV. Importing Your Character back into Maya with the Motion Capture Data:

1. Go to Character Controls and in the Edit pull-down choose Plot Character... and plot it to the skeleton (check the box for Constant Key Reducer to ensure you don't have key frames on every frame) then hit 'plot' on the pop up window
2. Go to File/Export... and save your file as a '.fbx' file
3. Open your Maya file with your character, import the .fbx file and check the option to merge the file. Your character should open in Maya with the motion capture animation mapped onto it